South African Medical Journal

Organ of the Medical Association of South Affrica

Incorporating the *South African Medical Record* and the *Medical Journal of South Africa*

Registered at the General Post Office as a newspaper

S.-A. Tydskrif vir Geneeskunde

Blad van die Mediese Vereniging van Suid-Afrika

Waarby ingelyf is die *South African Medical Record* and the *Medical Journal of South Africa.*

By die poswese as nuusblad geregistreer

Cape Town, 9 January 1954
Weekly 2/6

Vol. 28 No. 2

Kaapstad, 9 Januarie 1954
Weekliks 2/6

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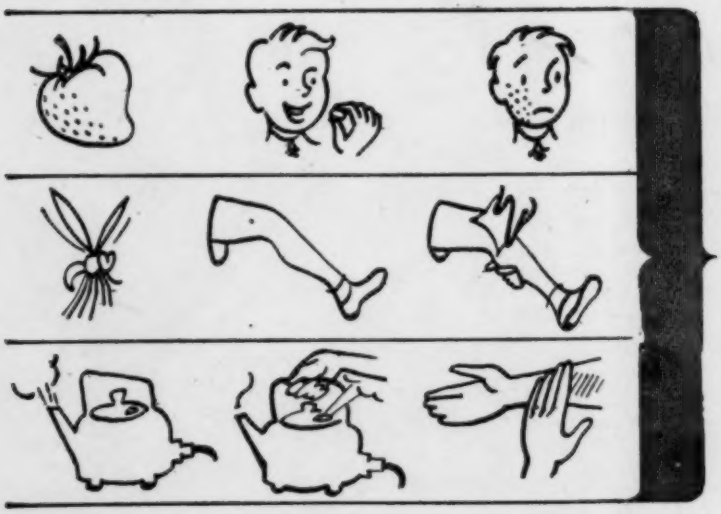

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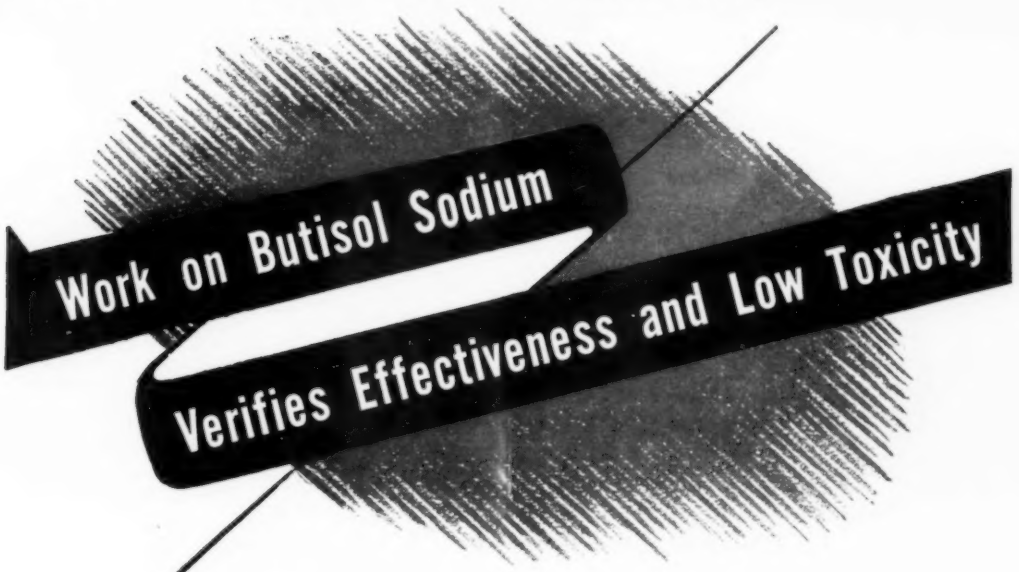

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*Gruber, C. M., Ellis, F. W. and Freedman, G., J. Pharmacol. & Exper. Therap. *81*:254 (July) 1944

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Cape Town, 9 January 1954
Weekly 2/6

Vol. 28 No. 2

Kaapstad, 9 Januarie 1954
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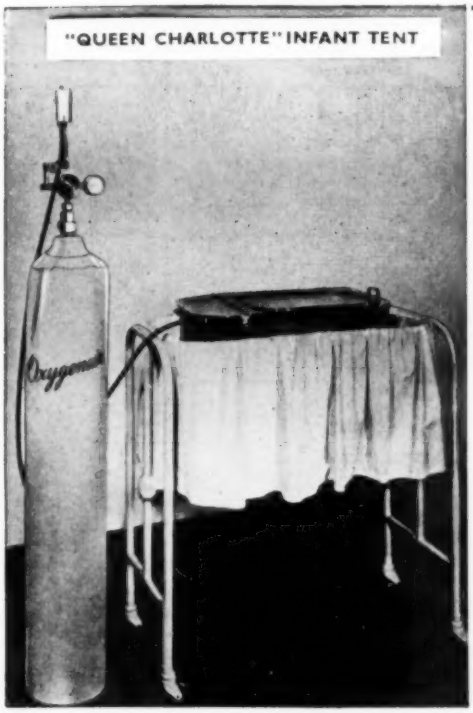

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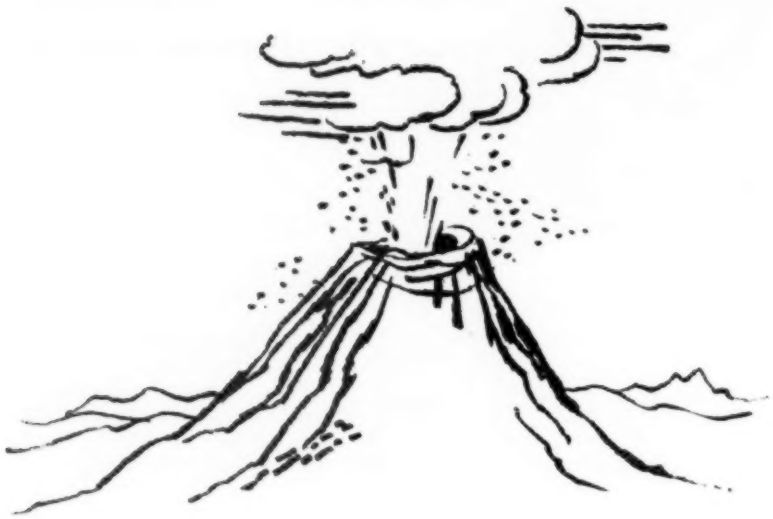

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1. Valentine, F. C. O.: *LANCET* **2**:251 (AUG. 23) 1952.
2. Reiss, F.: *NEW YORK STATE J. MED.* **52**:1031 (APR. 15) 1952.

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Further afield, Canadian workers[4] at McGill University and the Montreal Neurosurgical Institute have assessed the value of 'Mysoline' in 61 cases which had responded poorly to other types of medication. Here 'Mysoline' reduced the number of attacks by 50% or more in 35% of the patients Cases of major convulsions, petit mal, and automatism were included among those benefited.

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1. Lancet, 1952, **1**, 742
2. 2. Lancet, 1953, **1**, 1154
3. Lancet, 1953, **1**, 1024
4. Canad. Med. Ass. J., 1953, **68**, 464

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TOXOPLASMIC ENCEPHALITIS IN SOUTH AFRICA

REPORT OF TWO CASES

B. J. P. BECKER, M.D., B.CH., D.P.H., D.T.M. & H. (RAND)

Department of Pathology, South African Institute for Medical Research, Johannesburg

Toxoplasmosis is now a well-recognized disease in humans with a world-wide distribution. Although the micro-organism was first described by Nicolle and Manceaux in 1908 in the *gondi*, a North African rodent, South Africa has lagged behind the rest of the world in the recognition of animal carriers and the diagnosis of human cases.

Credit for the report of the first human case in Africa probably belongs to Wiktor [2] (Congo), closely followed by Klenerman [3] (Cape Town) and Jellife [4] (Western Nigeria). Extraordinary interest has been shown in the parasite in the last few years, and excellent reviews have been published by Callahan *et al.* [5], and by Weinman [6], while detailed pathological descriptions are given in the papers of Wolf *et al.* [7, 8]. A further review is unnecessary in this article, the object of which is to report 2 fatal human cases seen recently on the Witwatersrand.

In childhood, infection with toxoplasma may be of congenital or acquired origin. The congenital form is characterized by the tetrad of hydrocephalus, convulsions, cerebral calcification and choroido-retinitis (Sabin [9]). This type has been frequently recorded and is probably the best-known form.

CASE 1

R. J. N., a female infant, 5 months old, born in Mufulira, Northern Rhodesia. The mother has 3 other children who are all normally developed and quite healthy. There was no history of congenital deformities in either the mother or the father's families. During this pregnancy the mother developed pre-eclamptic toxaemia and early labour was induced. R. J. N. was born at 35 weeks, and weighed 4 lbs. 2oz.

About 3 weeks after birth it had been first noticed that the head was abnormally large and, since that time, it had enlarged rapidly. On examination, a marked congenital hydrocephalus was found. Special investigations by Mr. H. Mendelow of the Neuro-surgical Unit, Johannesburg General Hospital, demonstrated that a block existed in the Sylvian aqueduct. The infant died from an acute meningitis at the age of 5 months.

An *autopsy* was performed on 22 June 1953. The head was about 3 times the normal size. The fontanelles were widely patent and the parietal bones markedly softened. Surgical burr holes and a healed posterior surgical flap were noted. The dura mater was densely adherent to the calvarium. The pia-arachnoid was thickened and opaque, particularly at the base, and many fine fibrous adhesions were present between the dura mater and the pia-arachnoid. Several loculated cystic collections of cerebrospinal fluid were present in the occipital and frontal regions. The brain was grossly enlarged. A purulent meningitis was present at the base.

The brain was carefully removed, suspended in 10% formol-saline for 10 days and, when fully fixed, was examined, the following features being found: The fourth ventricle and the posterior third of the Sylvian aqueduct were small. The middle third of the aqueduct was stenosed and the third and lateral ventricles were grossly dilated.

Apart from the cerebral condition, no other significant pathological changes were found at post-mortem.

Summary: (1) Sylvian aqueduct stenosis, (2) Internal hydrocephalus, (3) Chronic cystic arachnoiditis, (4) Terminal purulent meningitis.

Histopathology: 1. Leptomeninges: There was a chronic arachnoiditis with infiltration by plasma cells, mononuclears and lymphocytes. A terminal purulent leptomeningitis was present at the base (Fig. 1).

2. Sylvian Aqueduct: The ependyma showed non-granular-celled infiltration. There was a subependymal polypoid glial granuloma which had ulcerated. This granuloma had occluded the lumen (Fig. 2).

3. Cerebellum: Small granulomata were found in superficial parts of the cerebellar cortex (Fig. 1).

In these lesions calcium deposits lying free and also within macrophages were constantly seen. Parasites were scanty.

This case corresponds to the congenital form of toxoplasmosis as described by Callahan *et al.* [5].

The acquired type of toxoplasmosis as seen in later childhood is less common. Up to 1946 only 1 fatal case had been recorded (Sabin 9). Fisher 10 briefly reviewed the reported cases up to 1951. The meningo-encephalitic infection in later childhood may have none of the stigmata of the congenital case and may simulate meningitis, encephalitis or even an intracranial tumour.

CASE 2

P. W., aged 4 $^{6}/_{12}$ years, a European male child living on the Witwatersrand, had lost weight and felt 'off colour' for about 2 months, when he was suddenly taken acutely ill with temperature, stupor and convulsions. He rapidly became unconscious with immediate and severe papilloedema, and high temperature. The cerebrospinal fluid was under pressure and contained a large number of cells—lymphocytes and polymorphonuclears. He rapidly passed into a state of complete decerebrate rigidity and remained so until death. The total history was about 6 weeks.

Autopsy. Permission was received for examination of the head only.

The brain was swollen, the meninges congested and several large and small foci of gelatinous-like softening were found in the cerebral hemispheres, especially on the left side.

Histopathology: 1. Leptomeninges: Chronic arachnoiditis with infiltration of non-granular cells was present.

2. Cerebrum: Extensive necrosis and massive demyelination were present in the white matter. In these foci there was complete loss of architecture, with numbers of foamy gitter-cells. Immediately adjacent to these areas there was astrocytic proliferation and lymphocytic and plasma-celled infiltration. The blood vessels were cuffed with layers of fat-laden macrophages. Many of the astrocytes were of the *gemästete* type. Within the foci of necrosis and in adjacent areas calcium deposits were extensive. Toxoplasmic cysts were seen in moderate numbers, both in and around the necrotic areas (Figs. 3 and 4).

The cerebral cortex showed loss of nerve cells, but was not heavily involved, and the arcuate fibres were spared.

Smaller lesions of the same type were observed in the basal ganglia, in the periventricular regions and in the pons and medulla.

Summary: (1) Necrotizing and demyelinating encephalitis of wide distribution. (2) Toxoplasmic 'pseudo-cysts' lying free and engulfed in macrophages.

The severity of the pathological lesions seen in this case is unusual in infections of later childhood and is more like those seen in very early infancy. In contrast to the widespread destruction of the brain observed in the infantile form, the disease in older children and adults

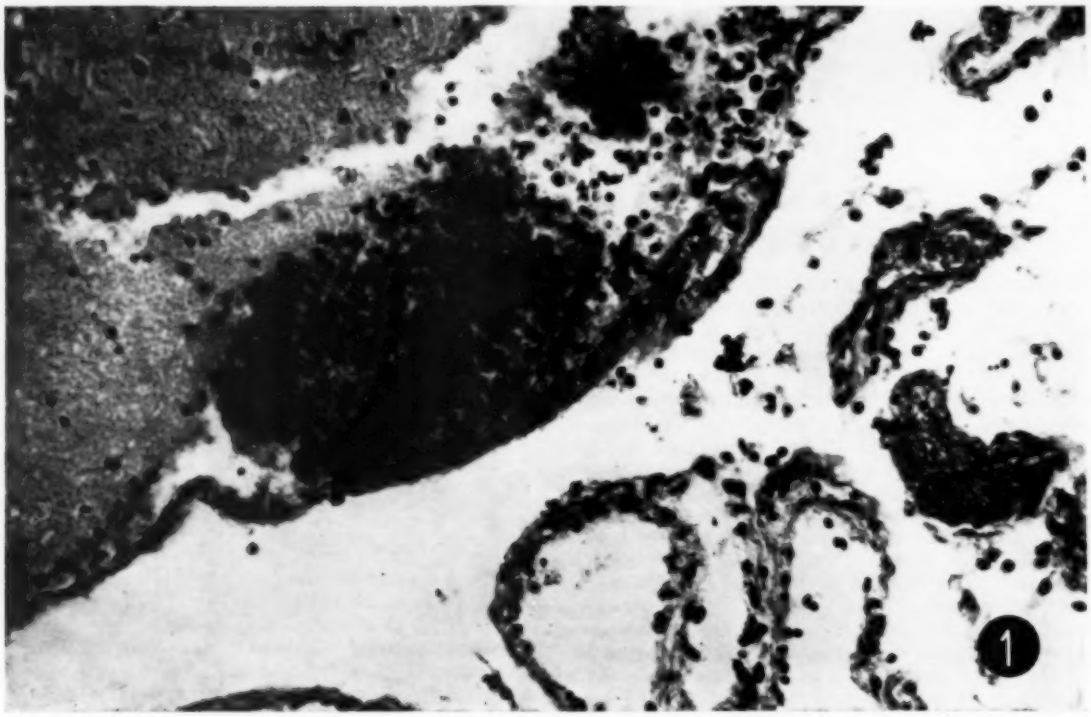

Fig. 1. Photomicrograph of cerebellar cortex. H. and E. X 350. The illustration shows the chronic arachnoiditis and the presence of a small, superficial granuloma in the cerebellar cortex.

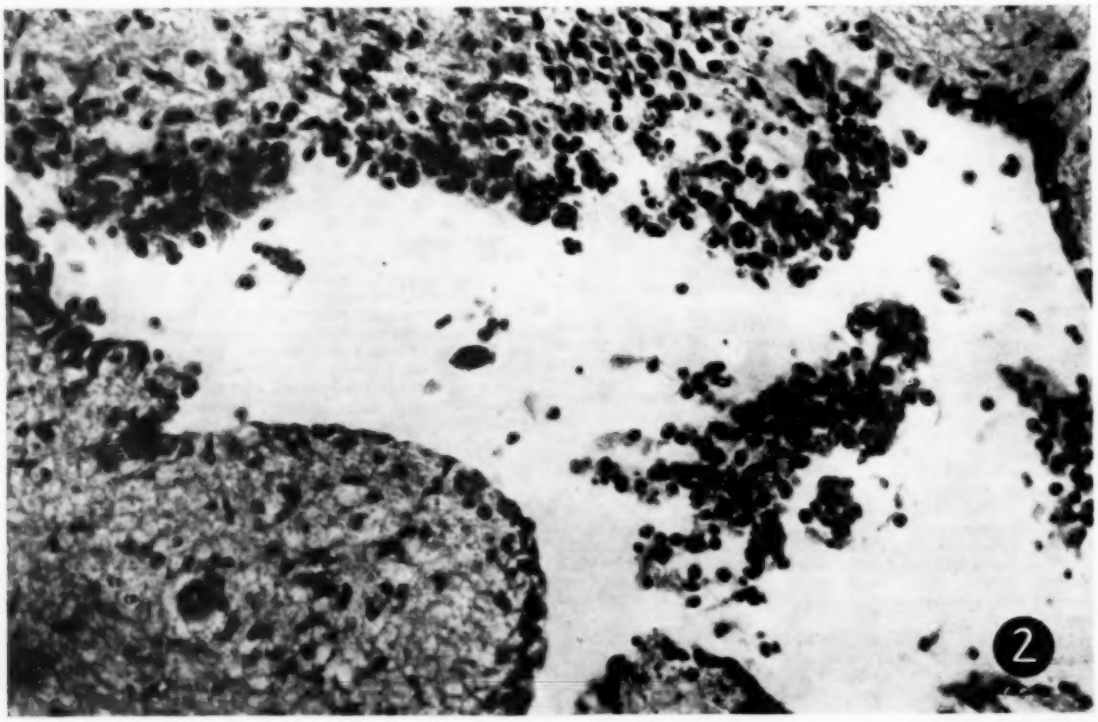

Fig. 2. Photomicrograph of Sylvian Aqueduct. H. and E. X 350. The plate illustrates the ulcerated, polypoid subependymal granuloma.

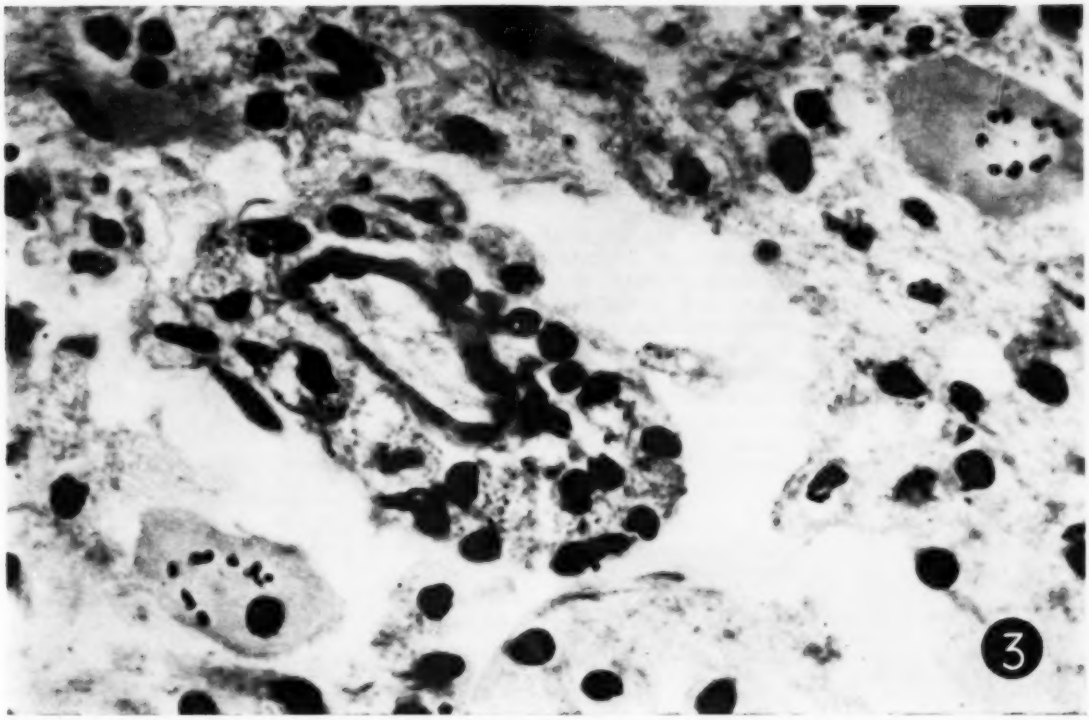

Fig. 3. Photomicrograph of section of white matter of cerebral cortex. Goodpasture's stain X 450. The section shows a blood vessel encuffed by foamy gitter-cells. Two toxoplasmic pseudocysts are lying in the necrotic tissue.

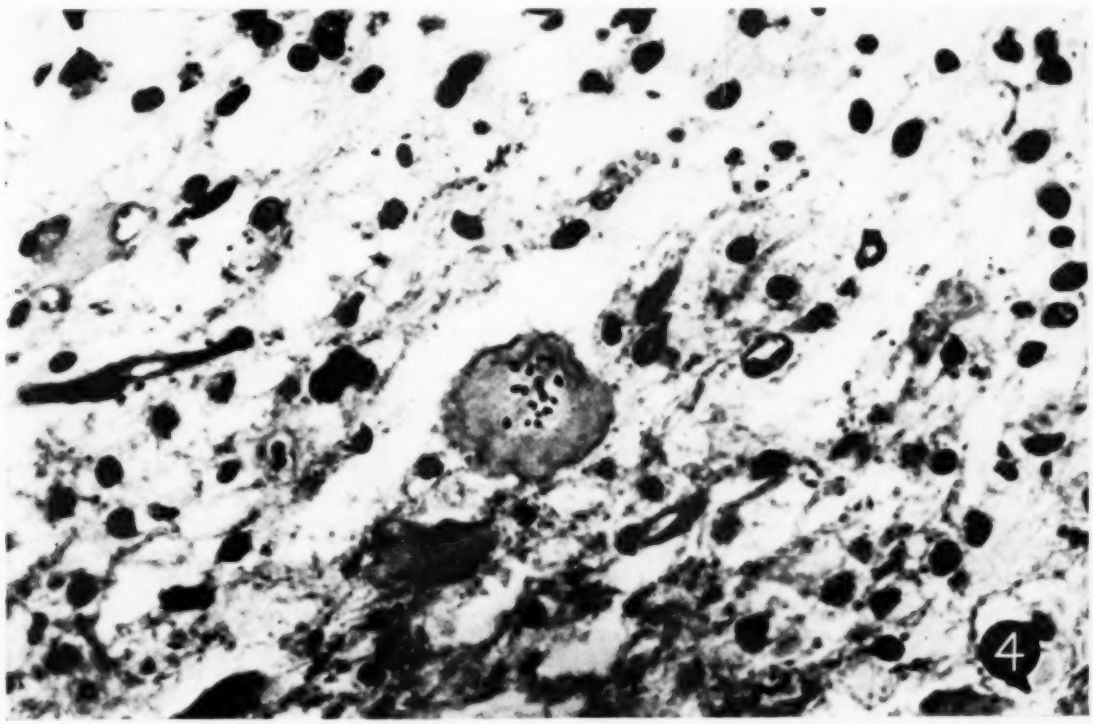

Fig. 4. Photomicrograph of section of necrotic zone of white matter of cerebral hemisphere, Goodpasture's stain X 450. A toxoplasmic pseudocyst is shown lying in the necrotic tissue. Note also the gemästete astrocytes.

is milder and changes are much more manifest in other viscera than in the central nervous system (Callahan *et al.* [5]).

The lungs, heart, blood vessels, skeletal muscles, liver, spleen, lymph nodes, bone marrow, kidneys, ovaries, testes, skin and subcutaneous tissues may all be involved to a greater or lesser extent. The clinical onset in the adult form frequently closely resembles that of tick typhus—sudden onset with chills and fever, maculopapular eruption and even tick-bites. Pulmonary involvement then becomes the outstanding clinical and pathological feature. The other main type in adults is the meningo-encephalitic form. Callahan [5] quoted a case in an American soldier in whom there were numerous areas of encephalomalacia with numerous parasites in and around the lesions. This corresponds closely with Case 2 (P.W.) reported here. Usually, however, the lesions are small, focal and granulomatous, and parasites are scanty.

SUMMARY

1. Two fatal cases of toxoplasmic encephalitis are described. The first—a classical example of the congenital type—occurred in a European infant from Northern Rhodesia; the second—an example of the fulminating encephalomalacic type—occurred in a European child living on the Witwatersrand.
2. Attention is drawn briefly to the varied clinical forms which have been recorded in adults, especially the types which simulate tick typhus.

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STANDARDS FOR ICE CREAM, MILK SHAKE AND SHERBET

The Minister of Health (Government Notice No. 2742 of 11 December 1953) has notified his intention under the Food, Drugs and Disinfectants Act No. 13 of 1929 of amending the existing regulations by the substitution of a new regulation, laying down standards as follows:

(1) *Ice Cream Mix* shall be the unfrozen, pasteurized and homogenized product prepared from one or more of the following: fresh cream, butter, milk, skim-milk, sweetened or unsweetened condensed milk, milk powder or skim-milk powder, with glucose, dextrose or sucrose and water.

The finished article shall contain no preservative, not more than 1 per cent of stabilizer and emulsifier, not less than 33½ per cent by weight of total food solids and not less than 10 per cent by weight of milk fat.

No fat other than milk fat shall be permitted and the Reichert-Meissl value of the extracted fat shall not be lower than 24.

(2) *Ice Cream* shall be the frozen food made from ice cream mix with the addition of harmless flavouring and colouring matter, with or without the addition of cocoa or chocolate syrup, fruit, nuts or confections and shall contain not less than 33½ per cent by weight of total food solids and not less than 10 per cent by weight of milk fat.

(3) *Milk shake* shall be prepared with ice cream and milk or milk powder, skim-milk or skim-milk powder and permitted natural flavouring and colouring matter. It may be sweetened with sugar (sucrose) and may contain glucose.

(4) *Sherbet* shall be frozen food other than ice cream made from a milk product, with or without water, sweetening agent, fruit or fruit juice and harmless flavouring and colouring agents. Stabilizers and emulsifiers may be present in amounts not exceeding 1 per cent by weight of the finished product. It shall contain not less than 3 per cent by weight of milk solids, including milk fats.

Interested persons are invited to submit criticism to the Secretary for Health, P.O. Box 386, Pretoria, not later than 11 March 1954.

Preservative in Carbonated Fruit Squashes. The Minister of Health (Government Notice No. 2752 of 11 December 1953) has made amended regulations allowing carbonated fruit squashes containing not less than 5 per cent of fruit juice to be sold with a content of not more than 120 gr. per pint of either sulphur dioxide or benzoic acid.

ABSTRACTS : UITTREKSELS

A Human Blood-Group Chimera. I. Dunsford, C. C. Bowley, Ann M. Hutchinson, Joan S. Thompson, Ruth Sanger and R. R. Race (1953): Brit. Med. J., **2,** 81.

A donor, Mrs. McK., aged 25, gave blood which on grouping seemed to be a mixture of A and O cells. There had been no admixture of bloods, and the finding called to mind the work of Owen [1] on *Immunogenetic Consequences of Vascular Anastomoses Between Bovine Twins.* Mrs. McK. had a twin brother who had died 25 years before at the age of 3 months from pneumonia complicating a strangulated inguinal hernia.

'The O and A_1 cells in the blood of Mrs. McK. can be separated. The result of grouping the two components is shown in the pedigree; the O cells are kk, Jk(a+b+), the A_1 cells are Kk, Jk(a−b+): in their other groups they do not differ. There is no doubt that the true genetic blood groups of Mrs. McK. are those shown under her name in the pedigree. This is established by the fact that she secretes O(H) antigen in her saliva but does not secrete A antigen. Since the red cells of her twin are A_1, Le(a−b+) he must have secreted A. It is strange that we should be able to group completely this twin 25 years after his death.'

The relative number of the two kinds of red cells were counted: 61% were Group O ($\varphi = 1.7\%$).

'Mrs. McK. is the first human being to be shown to have a double set of blood groups, and there can be little doubt that one set is the consequence of vascular communication with her twin. Though we have been prepared for this discovery by the work of Owen on bovine twins, such a mixture of blood cannot be common in human twins: the Blood Group Research Unit has tested the blood of 58 pairs of dissimilar twins and 82 pairs of apparently identical twins without finding any evidence of mixed blood groups. Alternative explanations have been considered: somatic mutation is excluded because three separate genes are involved, and dispermia is highly improbable, for Mrs. McK. shows no obvious sign of asymmetry. None of the blood samples from the other surviving members of the family was in any way unusual.

'Mrs. McK. is feminine in appearance and has had one child: she is clearly not a freemartin.'

1. Owen, R. D. (1945): Science, **102,** 400.

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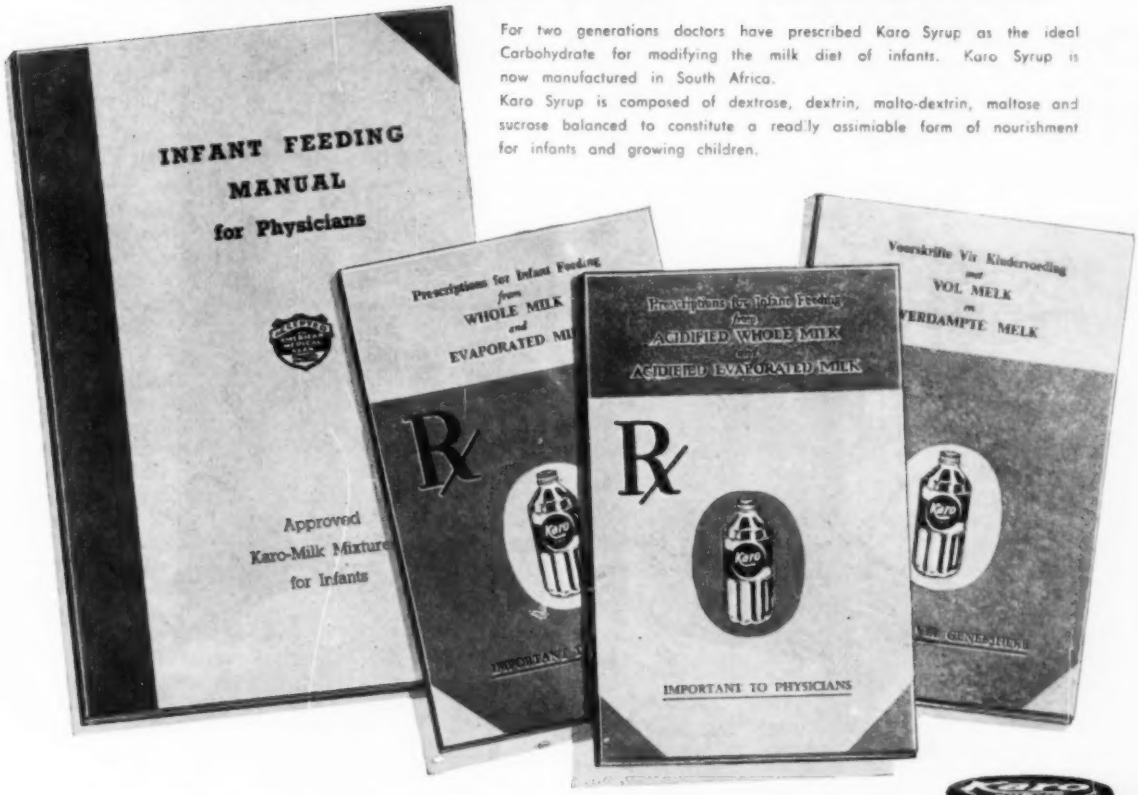

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South African Medical Journal
Suid-Afrikaanse Tydskrif vir Geneeskunde

EDITORIAL

MUSHROOMS

Poisoning from the ingestion of mushrooms fortunately occurs very seldom. The doctor called in to deal with the emergency has to decide whether to empty the alimentary canal, whether to inject atropine, and whether to take action to prevent or check liver damage. It is important to know which fungus has been eaten; then from a knowledge of the poisonous principles present in that variety the correct therapeutic steps can be taken. The history, the time which elapses before symptoms appear, and the nature of the symptoms will aid in the establishment of a correct diagnosis. The two books recently written by a well-known South African authority on fungi [1, 2] simplify the problem for the doctor and the layman. With the aid of the excellent illustrations the fungi concerned can be rapidly identified.

An important point for doctors to recognize is that atropine must not be given as a routine procedure. *Amanita muscaria* (the Fly Agaric; *Vlieëswam*) as its name suggests and *Amanita pantherina* (The Panther; *Panter-amaniet*) contain some muscarine, a drug with cholinergic actions for which atropine is the specific antidote; so too with several species of *Clitocybe* and *Inocybe*. Strange as it may seem, these fungi are stated to contain also relatively large amounts of 'myceto-atropine', which produces, amongst other features, stimulation (delirium, hallucinations) followed by paralysis of the central nervous system. If this is so it follows that the use of atropine in poisoning with these fungi may be contra-indicated. Analysis of these species is desirable in South Africa to establish the relative amounts of muscarine and myceto-atropine they contain.

If more than 6 hours have elapsed from the time of eating certain fungi and the appearance of symptoms the situation is generally serious, for the slow-acting and very dangerous Death Cups (*Amanita phalloides—Duiwelsbrood, Doodsbekerswam* and *Amanita capensis—Kaapse amaniet*) have very likely been eaten; their poisons affect the liver and other organs.

Many people eat mushrooms and other fungi for the pleasant relish they can add to a meal. Nearly 200 kinds of mushrooms and toadstools are reported as growing within 40 miles of Cape Town alone and of these about 60 are known to be edible.[2]

Fungi are sought for as a food in certain countries with severe winters, amongst religious sects where meat is forbidden, e.g. during great fasts of the Russian Greek Orthodox Church, and by starving people, as during war. In a recent article in which this subject was considered [3] it was pointed out that great variations in chemical

VAN DIE REDAKSIE

SAMPIOENE

Gelukkig kom vergiftiging deur sampioene baie selde voor. Die geneesheer wat die noodgeval behandel moet besluit om òf die spysverteringskanaal te ledig òf antropien in te spuit, òf skade aan die lewer te voorkom of te stuit. Dit is van belang om te weet watter fungus geëet was; met 'n kennis van die vergiftigende eienskappe van die besondere soort kan die regte geneeskundige behandeling toegepas word. Die geskiedenis, die tydduurte voordat simptome verskyn en die aard van die simptome sal help om 'n juiste diagnose te maak. Die twee boeke wat onlangs deur 'n bekende Suid-Afrikaanse deskundige oor fungi [1, 2] geskrywe is, vereenvoudig die probleem vir beide die geneesheer en die leek. Met behulp van die uitstekende plate kan die betrokke fungi maklik uitgeken word.

Dit is belangrik vir geneeshere om te besef dat antropien nie as roetinebehandeling toegedien moet word nie. *Amanita muscaria* (Vlieëswam; *the Fly Agaric*), soos in die naam aangedui, en *Amanita pantherina* (Panter-amaniet; *the Panther*) bevat muscarien, wat 'n cholienergiese uitwerking het, waarvoor antropien die spesifieke teenmiddel is; dieselfde geld ook vir verskeie soorte *Clitocybe* en *Inocybe*. Dit word gemeld dat hierdie fungi eienaardig genoeg ook relatief groot hoeveelhede ‚myceto-antropien' bevat, wat onder ander prikkeling (delirium, sinsbedrog) veroorsaak gevolg deur verlamming van die sentrale senuweestelsel. Indien dit die geval is, is dit vanselfsprekend dat die gebruik van antropien as middel teen vergiftiging deur hierdie fungi ongewens mag wees. Dit is wenslik dat hierdie soorte in Suid-Afrika ontleed moet word om die relatiewe hoeveelhede muscarien en myceto-antropien wat hul bevat te bepaal.

As meer as 6 uur verstryk het vandat sekere fungi geëet is en voordat simptome verskyn het is die posisie gewoonlik ernstig want dit is hoogswaarskynlik dat van die baie gevaarlike *Death Cups* (*Amanita phalloides*—Duiwelsbrood, Doodsbekerswam en *Amanita capensis*—Kaapse amaniet) geëet is wat 'n stadige uitwerking het; die gif wat hulle bevat werk op die lewer en ander organe.

Baie mense eet sampioene en ander fungi vir die aangename geur wat dit tot 'n maaltyd kan voeg. Na mening groei daar amper 200 soorte sampioene en paddastoele binne 40 myl van Kaapstad alleen, en ongeveer 60 van hierdie is as eetbaar bekend.[2]

Fungi word as voedsel gesog in sekere lande met strawwe winters, onder godsdienstige sektes wat die eet van vleis verbied (byvoorbeeld in Rusland gedurende die groot vastye van die Griekse Ortodokse Kerk) en

composition have been found in different species of mushrooms and toadstools. The mineral elements, expecially in the skin of the cap, are chiefly potassium, manganese, aluminium, silicon, sulphur and chlorine. About 66.8% of the nitrogenous material and 95% of the carbohydrate is assimilable. If used as the sole source of protein in the diet 100-200 g. dried mushroom a day would be necessary for the maintenance of nitrogen equilibrium. As a rule fungi are rich in ergosterol. They cannot be regarded as a good source of vitamins.

For those who are interested there are other points about mushrooms that require elucidation. These plants, having no green colour, cannot make their own food; therefore they live on food they get from dead plants and animals. Some of those which grow in the forest are associated with trees (oaks, pines) in symbiosis. There is a delicate balance between the host plant and the fungus. The whole problem of the relationship between the fungi and the higher plants is important as well as interesting, and much remains to be learned about it.

deur hongerlydendes, byvoorbeeld ten tyde van oorloë. In 'n onlangse artikel [3] toe hierdie onderwerp bespreek was, was daarop gewys dat 'n groot verskeidenheid chemiese samestellings in die verskillende soorte sampioene en paddastoele gevind word. Die mineraalstowwe, vernaamlik in die dopvel, is hoofsaaklik kalium, mangaan, aluminium, silicium, swael en chloor. Ongeveer 66.8% van die stikstofhoudende stowwe en 95% van die koolhidrate is verteerbaar. As dit gebruik word as die enigste bron van proteïen in die dieet sal 100-200 g. gedroogde sampioene per dag nodig wees om die stikstofbalans te behou. In die reël is fungi ryk aan ergosterol. Hulle kan nie as 'n goeie bron van vitamine beskou word nie.

Vir belangstellendes is daar ander aspekte van sampioene wat toeligting nodig het. Hierdie gewasse, omdat dit geen groen kleurstof bevat nie, kan nie hul eie kos vervaardig nie; derhalwe lewe hul van voedsel wat hul van dooie plante en diere verkry. In woude lewe party van hierdie fungi saam met bome (eike, denne). Daar bestaan 'n delikate ewewig tussen die gasheerplant en die fungus. Die hele vraagstuk van die verhouding tussen die fungi en die hoër plante is belangrik sowel as interessant, en daar is baie kennis wat nog daaromtrent ingesamel moet word.

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OFFICIAL ANNOUNCEMENTS : AMPTELIKE AANKONDIGINGS

MEDICAL AID SOCIETIES

The following new Medical Aid Societies were approved by Federal Council at its meeting held in Kimberley on 15-17 October 1953:

1. Abercom Group Sick Benefit Society, P.O. Box 715, Port Elizabeth.
2. Algoa Medical Aid Society, P.O. Box 543, Port Elizabeth.
3. Central News Agency Ltd. Medical Benefit Society, P.O. Box 1033, Johannesburg (excluding Cape Town and suburbs, Durban municipal area, Johannesburg and Witwatersrand, and Port Elizabeth and Pretoria municipal areas).
4. Egnep Medical Aid Society, P.O. Penge, Transvaal.
5. Koegas Medical Aid Society, P.O. Koegasbridge, C.P.

Approval was also granted to the following Benefit Societies to operate on the Tariff of Fees for Approved Medical Aid Societies for Specialist Services (Second schedules in the Tariff Book).

1. De Beers Consolidated Mines, Limited, Benefit Society, P.O. Box 616, Kimberley.
2. Randfontein Estates Employees' Sick Benefit Society, P.O. Box 37, Randfontein.
3. Roodepoort-Maraisburg Non-Scheduled Mines' and Industries' Benefit Society, P.O. Box 225, Roodepoort.

MEDIESE HULPVERENIGINGS

Op sy vergadering van 15-17 Oktober 1953 te Kimberley gehou het die Federale Raad onderstaande nuwe Mediese Hulpverenigings goedgekeur:

6. Legal and General Medical Aid Scheme, P.O. Box 4870, Johannesburg.
7. Pietermaritzburg Chamber of Industries Medical Aid Society, P.O. Box 365, Pietermaritzburg.
8. Printing Industry Medical Aid Society, S.A.T.U. House, 166 Visagie Street, P.O. Box 1993, Pretoria.
9. Safim Medical Aid Society, P.O. Box 233, Vereeniging.
10. Sasol Medical Aid Society, P.O. Box 1, Sasolburg, O.F.S.
11. Schwartz, Fine, Kane and Company Medical Aid Society, P.O. Box 5069, Johannesburg.

Goedkeuring was ook geheg aan die volgende Siekefondse om gebruik te maak van Spesialistedienste teen die tarief vir Mediese Hulpverenigings (Tweede lys in die tarieweboek).

FOOD PRESERVATIVES REGULATIONS AMENDED

Regulations have been promulgated by the Minister of Health (Government Notice No. 2665 of 4 December 1953) amending the regulations concerning food preservatives made under the Food, Drugs and Disinfectants Act No. 13 of 1929.

The effect of the regulations is to allow the use of a preservative of sodium nitrite and potassium nitrite provided the final nitrate content does not exceed 200 parts per million calculated as sodium nitrite; and also the following antioxidants used singly or in combination: resin guaiac (not exceeding 0.1%); tocopherols (not exceeding 0.03%); lecithin; citric acid, tartaric acid and ascorbic acid; propyl-, octyl-, decyl-, dodecyl-gallate (not exceeding 0.01%) with or without citric acid (not exceeding 0.005%;) butylated hydroxyanisole (B.H.A.) (not exceeding 0.02%) with or without gallates as above (not exceeding 0.01%). Citric acid (not exceeding 0.005%) or phosphoric acid (not exceeding 0.005%) may be added to these combinations.

CLINICAL OBSERVATIONS ON INTESTINAL MOTILITY

D. J. DU PLESSIS, CH.M. (RAND), F.R.C.S. (ENG.)

Department of Surgery, Medical School, University of Cape Town

Various methods have been used to investigate the motor activity of the alimentary canal, but although these have provided valuable information they cannot be used clinically. It is, however, essential for the clinician to have an accurate knowledge of the intestinal activity of his patient, particularly after a major abdominal operation, and this paper concerns itself with a clinical interpretation of intestinal motility. It is based on clinical observations made over a number of years on a large number of patients, a few of whom will be mentioned in detail to illustrate certain statements.

BOWEL MOVEMENT AND TONE

The normal bowel possesses movement and tone, [8, 33] and bowel movement is of two varieties: propulsion and segmentation.[15, 26, 33, 35, 46]

Propulsion. This consists of a wave of contraction which proceeds down the bowel, thus propelling the bowel contents downwards. The frequency of this type of contraction varies tremendously under different circumstances, usually occurring from 1 to 12 times per minute.[33, 36, 58] It is thus obvious that careful observation for over a minute is necessary before making a decision that this type of activity is absent.

Propulsive movement is detected by a typical, long-continued rumble heard on abdominal auscultation: this sound is termed a *first-degree bowel sound.* With the kind assistance of Dr. L. Vogelpoel of the Groote Schuur Hospital Cardiac Clinic, abdominal sounds have been recorded by means of a phonocardiogram placed on the abdomen and Figs. 1 and 2 demonstrate the appearance of first-degree bowel sounds on such a recording.

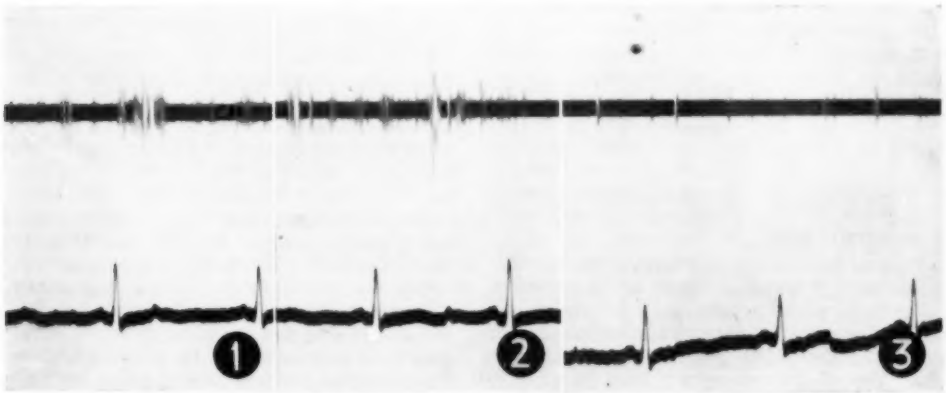
In a normal person with propulsive movements in his bowel, gastric suction yields only a very small volume of colourless fluid representing some of the gastric secretion.

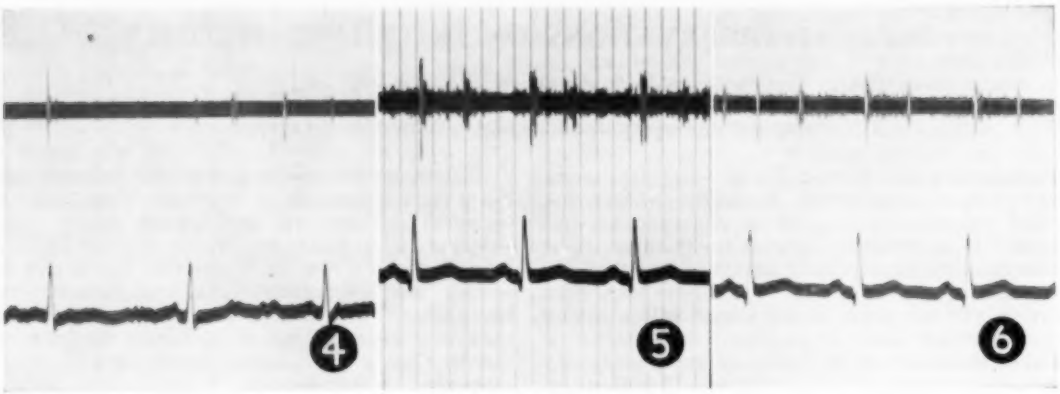
These propulsive movements are not normally painful but if there is some distal obstruction their force will be increased and they will then become painful. It is a valuable clinical sign to find that an attack of colicky pain coincides with a bout of exaggerated first-degree bowel sounds. This is the earliest sign of a mechanical intestinal obstruction [22] and enables a confident diagnosis to be made at a very early stage in the disease. This is exemplified by *Case* 1: A Coloured female aged 25, who had undergone a splenectomy 2 years previously, was admitted with the history of abdominal colic of only 3 hours duration. The only sign of intestinal obstruction was exaggerated first-degree bowel sounds which could be heard during the bouts of colic. Immediate exploration was remarkably easy because there was only one distended loop above a narrow fibrous adhesion which was obstructing the jejunum. The obstruction was relieved and the patient made an uninterrupted recovery.

Segmentation. This consists of repeated contraction and relaxation of different portions of bowel, which is thus divided into a number of segments at different spots each time. These movements vary in frequency from 10 to 30 times per minute, and their primary function is not to propel the bowel contents but to mix them, thus facilitating absorption and venous and lymphatic drainage.

Segmental movements can be recognized on abdominal auscultation as single, low-pitched sounds—*second-degree bowel sounds.* With the phonocardiogram they are recorded as sounds of short duration and fairly low intensity (Figs. 3 and 4).

It is difficult to prove that these sounds are produced by segmental activity, but this contention is strongly supported by the observations that they are not associated with peristaltic movements on screening after barium meals, nor with the extrusion of faeces from intestinal fistulae, and that morphine increases both





second-degree bowel sounds (see below) and segmental movements.[3]

After a period of intestinal inhibition these segmental movements return before the propulsive movements and their appearance is thus a signal of improvement but not of normality. In this stage of partial recovery gastric suction produces only a moderate amount of clear green fluid, representing gastric secretion and some biliary reflux.

Tone. Normally tone is present in the whole bowel and consequently the caliber of the bowel is normal and there is no abdominal distension.[13] Tone is higher in the upper portion of the bowel than in the lower bowel and this pressure-gradient can produce a slow onward movement of liquid bowel contents.[50] Thus, if tone remains but there is a cessation of all intestinal movement, there is an absence of distension and a silent abdomen, and gastric aspiration yields a moderate volume of turbid bile-stained fluid. Intestinal secretions are mostly passed on by virtue of the pressure-gradient described above, and consequently jejunal contents do not appear in the gastric aspirate, a positive gastric balance may be found and on occasions even a liquid stool may be passed.

This condition should be termed ileus. The bowel retains its tone and is consequently not completely paralysed, and therefore the term paralytic ileus should not be used for this condition.

If gaseous distension of the bowel is allowed to occur the tone of the gut will be lost.[54] Now the veins running circumferentially round the bowel to the mesenteric veins become obstructed by the raised intra-luminar tension, resulting in congestion of the bowel. This encourages increased secretion and decreased absorption in the bowel,[13, 54] and so a vicious circle is initiated, resulting in extreme distension. This may be so gross that the arterial supply to the bowel becomes obstructed, causing gangrene of the bowel, first noticed as small dark spots on the anti-mesenteric aspect of the bowel.

This state of affairs is recognized clinically by abdominal distension and hyper-resonance on percussion. Respiratory and cardiac sounds may be heard on abdominal auscultation, as these sounds are conducted by the gas in the distended bowel.[16] Simultaneous recordings of the electrocardiogram and a phonocardiogram on the lower abdomen were made on distended patients, and Figs. 5 and 6 show such recordings, with the cardiac sounds clearly recorded synchronously with the cardiac beats. The presence of audible cardiac sounds in the lower abdomen is thus good proof of the existence of abnormal bowel distension, and will be found a useful sign in the early stages of intestinal distension before obvious abdominal distension occurs.

The loops of distended bowel contain gas and fluid. Normal diaphragmatic excursion with respiration will produce some passive movement of the fluid levels in those loops, and on auscultation this will be recognised by short high-pitched tinkles—*third-degree bowel sounds.* A phonocardiographic recording of this produces faint sounds of short duration (Fig. 7).

In this condition tone is absent, and consequently intestinal contents regurgitate into the stomach: gastric aspiration will thus produce a large volume of foul smelling, turbid, brown fluid—so-called faeculent material. Distension inhibits bile flow,[51, 54] presumably due to reduction of venous return to the liver from the congested portal field, and consequently recognizable bile is not aspirated in this stage.

As there is complete paralysis of the bowel affecting both movements and tone, this condition is the true paralytic ileus. It forms a vicious circle and thus is an irreversible condition: spontaneous recovery is rare indeed.

THE EFFECT OF ABDOMINAL OPERATIONS

Soon after the operation an *ileus* occurs, which varies in duration, depending on the severity of the operation, from 12 hours after an easy appendectomy to 48 hours or more after a gastrectomy or colectomy.

The exact mechanism of production of this condition is not certain: until recently the mechanical irritation of the bowel during the operation has been blamed,[9, 21] but it now seems more likely that it is yet another manifestation of adreno-cortical activity following the 'stress' of the operation.[11] There are various observations which favour the latter theory: (1) It can occur after any operation or injury, even if the abdomen is not opened. (2) There is a lag period before its onset. Thus after short operations there may still be bowel sounds on auscultation immediately after the operation but they disappear

some time later, presumably when adreno-cortical secretion reaches its peak. (3) While there is evidence of adreno-cortical activity with potassium excretion, water and sodium retention and low eosinophil count, the ileus persists, and the return of bowel sounds coincides with the return of all these factors to normal.

Observations have been made on patients receiving cortisone, but inhibition of bowel movements has not been noticed, presumably because therapeutic doses are far smaller than the normal adrenal secretion after an operation, or possibly because one cannot translate pharmacological dosage into terms of endogenous secretion.

Whatever the cause, this ileus is a normal phenomenon and spontaneous recovery is the rule. It is recognised by a completely silent abdomen without distension, and gastric suction yields a slightly turbid green fluid.

As improvement occurs one gets a stage of *partial recovery* with second-degree bowel sounds and still no distension, and on gastric aspiration a smaller volume of clear green fluid is obtained.

Soon afterwards propulsive movements return with first-degree bowel sounds, and only a small volume of clear, colourless gastric secretion is obtained on gastric aspiration. At first these movements produce colicky pains—the state of post-operative *gas pains*. This clearly indicates some incomplete obstruction to the passage of intestinal contents, and it may be due either to occlusive kinking at the apex of each loop of bowel [10] or to the the fact that propulsive activity returns first to the proximal part of the bowel,[13] so that in the early stages the inert distal bowel acts as an obstruction.[3]

Whatever the mechanism, it is of short duration and soon flatus is passed and the cramps cease: only now is recovery complete with restoration to *normal intestinal activity*.

This progressive improvement occurs at a steady rate, and no attempt should be made to expedite return to normality. In the stage of ileus no good, but probably also no harm, will result from attempts at stimulation, such as enemata, purgatives and overfeeding, but during the intermediate stages of partial recovery and gas pains any stimulation may result in deterioration, with a return to ileus or even paralytic ileus.[13, 40] Once normality has been restored, i.e. painless first-degree bowel sounds, the bowel can tolerate the various insults to which it is so frequently subjected, and now the various forms of stimulation may be used with impunity and possibly benefit to the patient.

FACTORS WHICH DECREASE INTESTINAL MOTILITY

There is a large number of such factors which must be kept in mind when treating patients with ileus.

1. *Peritonitis.* This is one of the commonest causes of an ileus and is the most likely explanation of a persistent post-operative ileus. If the peritonitis is generalized it causes a generalized ileus with a silent abdomen, but if there is only a localized peritonitis the ileus may only affect that segment of bowel in actual contact with the peritonitis [10, 20]—a localized ileus. This inactive segment of bowel then acts as an area of obstruction,[10] with colic and accentuated first-degree bowel sounds proximal to that area, i.e. it presents clinically like a mechanical obstruction. It is possible that the peritoneal exudate may actually glue the loop of bowel to the surrounding structures, thus adding a true mechanical factor to that of the localized ileus. This was not present in *Case* 2: A Coloured female, aged 42, was admitted with abdominal colic, vomiting and constipation. She was distended, on abdominal auscultation there were exaggerated first-degree bowel sounds, and X-ray revealed small-bowel distension with fluid levels. A laparotomy was performed for what was thought to be a mechanical obstruction, but only acute salpingitis with pelvic peritonitis was found. The segment of small bowel in contact with the peritonitis was inactive, with no propulsive nor segmental activity on inspection (unlike the rest of the bowel), and there was no suggestion of a super-added mechanical obstruction. The patient made an uninterrupted recovery.

This type of case is presumably due to the local effect of the peritonitis on the bowel in that area,[4] and it is obvious that, apart from treatment of the ileus, vigorous treatment must also be directed at the peritonitis, because the ileus will only recover once the peritonitis has been cured.

2. *Intestinal Distension.* Moderate distension is a stimulant to propulsive activity [2, 29] and consequently in mechanical obstruction, where distension spreads upwards along the bowel, the peristalsis is maximal in this zone of commencing distension.[2] Extreme distension, on the other hand, results in total inhibition of bowel activity,[2, 20, 33, 34] with the result that in a neglected case of mechanical obstruction the gross distension will produce a paralytic ileus.[20] In this way a wrong diagnosis may be made, and consequently a careful history must be taken in all cases.

According to published reports, distension of only one loop of bowel or of the stomach may similarly inhibit the rest of the bowel.[9, 20]

3. *Sodium and Potassium Deficiency.* It is generally known that sodium and potassium deficiencies may produce a severe degree of paralytic ileus. Sodium deficiency is usually not difficult to diagnose, because sodium depletion only occurs under conditions of obvious unreplaced sodium loss, as is seen with profuse gastric aspiration, vomiting, intestinal fistulae and diarrhoea.

Potassium loss, on the other hand, occurs in the urine irrespective of the potassium content of the body and is particularly great following the stimulation of the adrenal cortex by an operation. This potassium loss continues during the post-operative phase even if the patient is unable to eat, and it is in this type of case, with potassium loss and no potassium intake, that potassium deficiency can occur so insidiously that it is difficult to separate from the primary pathological condition. It is thus important to keep potassium deficiency in mind as a possible cause for an unexplained post-operative ileus, but it is more important to prevent potassium deficiency by the routine administration of potassium intravenously to all patients on intravenous feeding for more than a few days.

4. *Morphine.* It has long been known that morphine produces constipation, but what many investigators have found 'difficult to evaluate' [22] is the 'increased intestinal motility' [59] and the 'constant gurgling peristaltic activity' [22] associated with the administration of the drug. It has frequently been shown that morphine reduces the propulsive waves but the tone and mixing waves are increased.[1, 3, 8, 14, 20, 22, 28 35, 45, 50, 60] In this way distension is controlled, absorption of gas and fluid is improved, but emptying of the bowel is delayed, thus producing constipation.

The increased intestinal sounds represent segmental activity only and can be recognized by a decrease of first-degree bowel sounds but an increase of second-degree bowel sounds. This can be verified by abdominal auscultation and is illustrated by the phonocardiographic recordings before (Fig. 8), and 45 minutes after, the injection of ¼gr. morphine (Fig. 9).

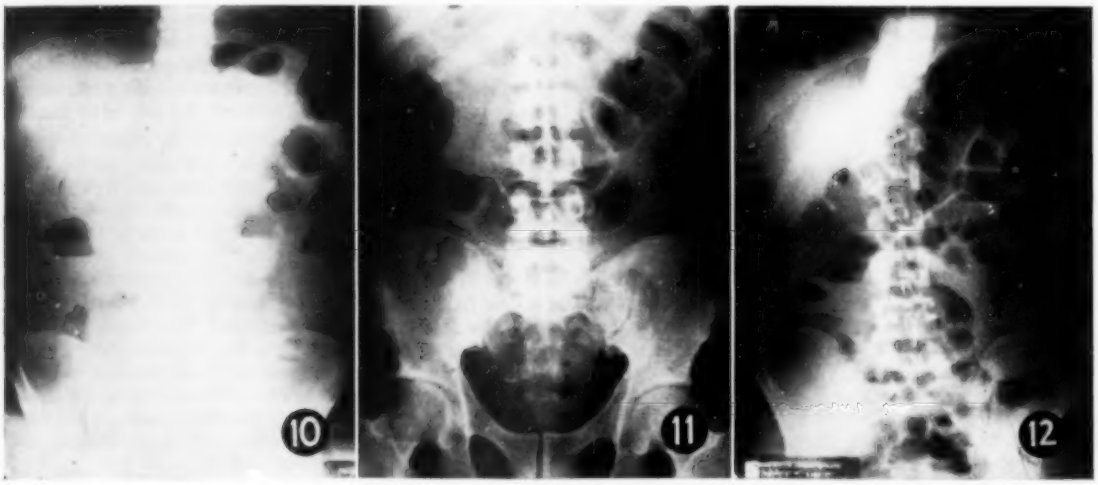
The increase of tone of the bowel produced by morphine is very definite, and duodenal spasm may be partly responsible for the vomiting induced by morphine.[34] It is consequently a very popular drug for the prevention and treatment of paralytic ileus, but this function is open to some doubt.[50]

5. *Distension of the Urinary Bladder.* A distended bladder may produce intestinal ileus,[5, 14, 20, 37] and it is consequently important to avoid urinary retention in the post-operative period, as it will aggravate the normal ileus following the operation. Release of intravesical tension will produce an increase in intestinal activity,[14] although the passage of a catheter will momentarily inhibit peristalsis.[5]

6. *Abdominal Trauma.* It is often assumed that the presence of bowel sounds after abdominal trauma excludes a perforation of a hollow viscus. Although it is true that the peritoneal soiling resulting from such an injury does produce an ileus, it is by no means a rule to be relied upon, and in a series of the author's of 53 abdominal injuries with bowel perforation bowel sounds were heard in 6. The presence of bowel sounds cannot therefore be used as a reliable sign, but there is no doubt that the absence of bowel sounds after abdominal injury should receive very serious consideration indeed.

7. *Acute Pancreatitis.* This condition produces a localized ileus affecting either the upper portion of the small bowel (Fig. 10) or the colon (Fig. 11). Such an area of localized ileus may again act as a site of mechanical obstruction, producing increased peristalsis proximal to the affected area. It is this sign which causes the frequent misdiagnosis of intestinal obstruction.

The mechanism of this type of localized ileus is speculative, but it is reasonable to suppose that it is due to a neurogenic reflex arising in the base of the mesentery of the bowel in the vicinity of the diseased pancreas.



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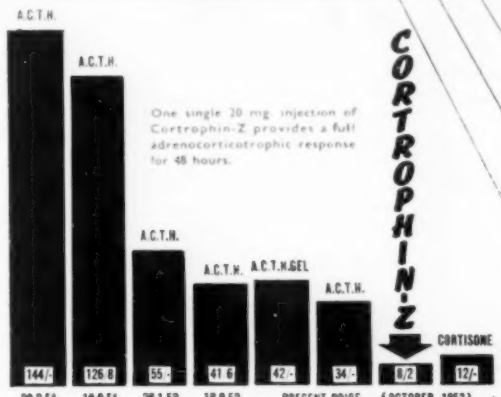

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8. *Acute Porphyria.* In this very interesting condition an ileus is also produced, but the mechanism by which it arises is obscure. The ileus may be generalized, with complete absence of bowel sounds, or it may be localized to a small portion of bowel. In such a case, again, the localized area of ileus will act as a mechanical obstruction, which is very frequently diagnosed. One such case is *Case* 3: A Coloured man presented with abdominal colic, excessive peristalsis, and dilated bowel on X-ray (Fig. 12). Laparotomy was performed but no cause for an obstruction could be found. Subsequently the correct diagnosis was made. He made an uneventful recovery.

9. *Mesenteric Lymphadenitis.* In mesenteric lymphadenitis the patient often presents with intestinal colic, and the usual explanation is that there is lymphoid hyperplasia in the bowel giving rise to incomplete obstruction. Golden [27] suggests, however, that it is due to nerve-irritation in the mesentery, producing a localized area of intestinal spasm or ileus with resulting obstruction. This may well be the explanation of the colic of acute non-specific mesenteric lymphadenitis [33] or of some of the vague pains in the right iliac fossa.

10. *Miscellaneous Factors.* There are many other factors which inhibit intestinal movement, such as hypoprotinaemia,[11, 20, 39, 49] deficiency of Vitamin B [17] and Vitamin C [30], sleep [3], fear and depression [50], excess intravenous saline [39], disagreeable circumstances [14], bad news [14], adrenaline [14, 20, 21, 38, 60], ephedrine [14], benzedrine,[24] insulin,[20, 47, 55] hyoscine,[20, 50] amyl nitrite,[20, 35, 50] aspirin,[20] barbiturates,[20] a tube in the anus,[37] quaternary ammonium compounds [50] and atropine.-,[12, 14, 20, 23, 45, 50]

Of all these only atropine has been observed specifically, and there is no doubt that it produces a significant decrease in bowel movement, as is clearly illustrated by the recordings made before (Fig. 13), and 45 minutes after, the hypodermic injection of 1/50 gr. atropine (Fig. 14).

FACTORS WHICH STIMULATE INTESTINAL MOTILITY

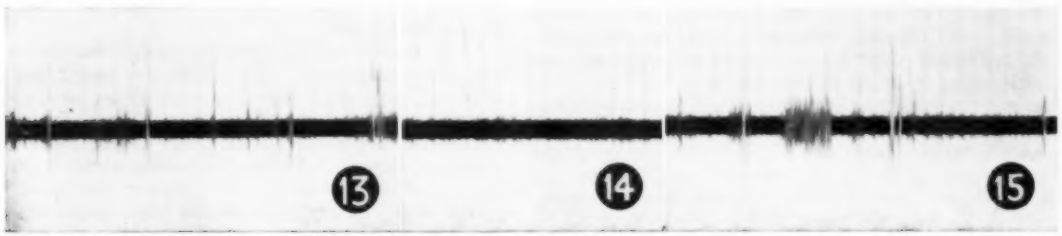
These are important to the surgeon for two reasons. Firstly, stimulation of the bowel is always followed by a period of inhibition, which will accentuate the usual post-operative ileus if these two conditions occur simultaneously. Secondly, any stimulation of the bowel in the phase of incomplete recovery from an ileus may produce a deterioration of the condition. The surgeon must thus be careful not to do anything to stimulate bowel if one of these two disadvantages is likely to result.

1. *Enema.* This is a most powerful stimulant of peristalsis but it is followed by a period of inhibition for up to 24 hours.[7, 13, 14, 20] This is clearly shown on the tracings taken before (Fig. 15), and one hour after, an enema (Fig. 16).

Pre-operative enemata should thus be avoided because the usual post-operative ileus will be exaggerated.[6, 13, 20] In addition, an enema given before complete recovery from an ileus may delay recovery.[13] This is well illustrated in *Case* 4: A European male, aged 50, had a gastrectomy performed. He made a satisfactory recovery up to the stage of peristalsis with colic, which was misinterpreted by his surgeon as a mechanical obstruction. An enema was prescribed. It had no beneficial effect and resulted in a return to ileus for another 36 hours.

2. *Purgatives.* These have a similar effect to enemata. Consequently pre-operative purgatives should be avoided [6, 13, 16] and no purgatives should be given after an operation until normal peristalsis has been restored.[6]

3. *Food taken by mouth.* This has a very definite stimulating effect,[3, 20] as can be seen on the recordings made before (Fig. 17), and half an hour after, a meal (Fig. 18). Excessive feeding during recovery from a post-operative ileus may thus produce a deterioration,[13] as occurred in *Case* 5: A Coloured male, aged 25, was admitted with a simple mechanical obstruction from adhesions following on a previous operation. This was



relieved at laparotomy and he recovered in a normal manner, but his feeds were increased too rapidly, with the result that he developed an ileus again. It was assumed that there had been a perforation of the previously distended loop, but at a second laparotomy no cause for an ileus could be found. He made an uneventful recovery.

Small amounts of water do not stimulate peristalsis significantly and may thus be given post-operatively before there is restoration to normality[6]: very cold or very hot water is very much more stimulating and should consequently be avoided.[6, 40]

4. *Splanchnic Block.* This undoubtedly stimulates peristalsis according to some authors,[20, 48] but the effect is only apparent while the block is effective. A clinical appraisal by the author of a large number of gastrectomies, performed with and without splanchnic blocks, failed to demonstrate any beneficial effect on the duration and severity of the post-operative ileus.

This is confirmed by the opinion that sympathetic pathways in man do not appear to exert a continuous inhibitory effect on bowel motility, as they do in animals.[56] Nevertheless, many surgeons still consider that a splanchnic block is of value post-operatively,[18, 42] and it is even stated that after bilateral splanchnicectomy post-operative ileus does not occur.[21]

5. *Miscellaneous Factors.* There are many other stimulants of bowel motility such as anger and resentment,[50] prostigmin,[14, 50] pituitrin,[14, 24, 25, 29, 53, 58] bile salts by mouth [20, 31] or per rectum,[31] hypertonic saline intravenously or by mouth,[20] and carminatives.[44]

PARALYTIC ILEUS

Prevention. A paralytic ileus is an ileus which has deteriorated, and it is thus obvious that the best way to prevent paralytic ileus is to treat the usual post-operative ileus effectively. It must be kept in mind that this post-operative ileus must be allowed to run its course and no attempt should be made to interfere with it.

The correct treatment of the usual post-operative ileus should be along the following lines:

1. *Avoid further inhibition.* This is done by avoiding the numerous inhibiting factors mentioned above, but particularly one should avoid pre-operative purgation or enemata, vitamin deficiency, urinary retention, adrenaline, excessive dosage with atropine or barbiturates and hypoprotinaemia.

2. *Avoid premature stimulation.* When the bowel has completely recovered, stimulation can do no harm and may possibly do good, but during the period of recovery all stimulants should be avoided, particularly excessive feeding, purgatives, enemata and pituitrin.

3. *Avoid distension.* With the onset of distension tone is impaired and then paralytic ileus is very likely to occur. As 68% of the gas in the bowel is swallowed air,[32, 57] post-operative distension can be prevented by effective gastric suction.[19] This is therefore recommended as a routine following all operations which are likely to produce severe and prolonged ileus, and the suction must be continued until the ileus has recovered.

Treatment. Once paralytic ileus has occurred, the treatment should be along the following lines:

1. *Avoid further inhibition*—as above;

2. *Avoid stimulation.* This is also as described above. Pituitrin is sometimes recommended,[25] but if there is no bowel activity it has no value,[32] in the presence of mechanical obstruction it is harmful, and in the presence of a peritonitis it will tend to spread the infection.[32]

3. *Treat the cause.* If the cause can be treated, as in peritonitis, it should be treated strenuously, because the paralytic ileus will remain as long as the cause persists.

4. *Reduce intestinal distension.* Gastric, but preferably duodenal or even intestinal suction, will naturally remove gas and fluid from the distended bowel and will consequently reduce the degree of distension.[56] This should be used continuously and with great care to ensure that it is effective, because unless the degree of distension can be reduced the patient will not recover.

The gas in the bowel is chiefly swallowed air and consequently has a high nitrogen content. The blood, too, has a high nitrogen content, with the result that intestinal gas is not readily absorbed.[52] Oxygen inhalation will reduce the nitrogen tension in the blood and this will enable more nitrogen to be absorbed from the bowel, thus decreasing the distension.[7, 52]

Morphine is used as a routine in this condition by most surgeons. It probably has a beneficial effect by improving the tone of the bowel, but there is some doubt whether it is indeed of any value.[50]

5. *Maintain a normal internal environment.* While the treatment described above is being carried out, gross disturbances of water, electrolytes, protein, calories and vitamins may occur, and it is consequently important that these factors be kept normal by a carefully regulated system of intravenous feeding.

Prognosis. Provided adequate treatment is carried out, the prognosis of paralytic ileus is good and recovery is almost invariable.

Once bowel activity returns, a diarrhoea is a very frequent occurrence. The stools are liquid and foul-smelling, with an excess of mucus to be seen with the naked eye. Repeated attempts have been made to culture pathogenic organisms from these stools, but the only abnormality reported in each case has been the excess of mucus. This is thus not an infective diarrhoea but is probably due to the fermentation occurring in the bowel during the long period of intestinal stasis. The diarrhoea never lasts more than, at the most, 48 hours and requires no treatment.

CONCLUSIONS

Clinically one can thus recognize the following conditions:

1. Paralytic ileus, i.e. loss of tone and movements resulting in abdominal distension, third-degree bowel sounds, and profuse 'faeculent' material on gastric aspiration.

2. Ileus, i.e. loss of movement only, with normal tone resulting in a flat abdomen, no bowel sounds and a fair volume of turbid green material on gastric aspiration.

3. Partial recovery from ileus, i.e. normal tone but only segmenting movements resulting in a flat abdomen, second-degree bowel sounds, and a small volume of clear greenish material on gastric aspiration.

4. The stage of gas pains, i.e. normal tone with segmenting and propulsive movements resulting in a flat abdomen, second- and first-degree bowel sounds, but the latter associated with abdominal colic and a small volume of colourless material, sometimes tinged with bile, on gastric aspiration.

5. Normality, i.e. normal tone and movements resulting in a flat abdomen, second-degree and painless first-degree bowel sounds, and only a very small volume of colourless gastric secretion on gastric aspiration.

SUMMARY

The normal bowel has tone and propulsive as well as segmental movements, the latter heard on auscultation as first- and second-degree bowel sounds respectively.

Various factors inhibit the bowel and may produce an ileus. Recovery from an ileus occurs gradually through definite stages which can be recognized clinically.

If tone is also lost there is paralytic ileus, with abdominal distension and third-degree bowel sounds.

Thus 5 different states of bowel activity are described and the treatment for them is outlined.

Various factors stimulate the bowel and should be avoided except with normal intestinal motility.

The bowel sounds described are recorded by means of a phonocardiogram placed on the abdomen.

I wish to thank the Superintendent of the Groote Schuur Hospital for permission to publish this paper; Dr. L. Vogelpoel, of the Groote Schuur Hospital Cardiac Clinic, for his kind assistance with the phonecardiogram; and Mr. McManus for the photographs.

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A MASS MINIATURE X-RAY AND TUBERCULIN-TESTING SURVEY IN DURBAN INDUSTRY

A PRELIMINARY REPORT

E. H. FINE, M.B., B.CH.

C.S.I.R. Research Unit, King George V Hospital, Durban

During a 2-year period (December 1950-December 1952) the mass miniature X-ray unit (70 mm.) operating in Durban undertook a survey of Durban's main industries.

When survey work was first contemplated the aid of the local Chamber of Industries was enlisted and firms were informed through the Chamber's circular about the benefits to be derived from a survey. This, coupled with direct approach, has ensured more work than the unit can cope with, and it is a noteworthy fact that almost one-third of the firms thus first contacted have requested further surveys, usually at yearly intervals, and only one factory when approached for the second time has refused on the grounds that the first survey was a 'waste of time'.

This industrial work was interrupted several times for surveys of other population-groups.

One hundred and seventy-nine factories were visited. Of these 55 made up one well-organized survey arranged by the Industrial Council for the Clothing Industry, which covered all the clothing factories in Durban. This group is not separately treated in this article.

The staff of the mobile unit consisted of a driver, clerk, radiographer and medical officer. This team maintained an output of approximately 400 miniature X-ray exposures per morning, the afternoons being devoted to reading the film and taking 'large' X-rays (12 inches x 15 inches) of those individuals whose miniature film was in any way abnormal. One day a week was devoted to clinical and laboratory investigations of those who showed any X-ray abnormality.

PROCEDURE

On receipt of a request for a survey the firm was visited, and a suitable time and site for the van arranged, survey procedure and requirements explained, and pamphlets and posters left for display.

Immediately before the X-ray of each person took place a tuberculin-test was given. This test consisted of an intradermal injection of 0.1 cc. of 'purified protein derivative' (P.P.D.) into the flexor surface of the middle third of the left fore-arm, which had previously been cleaned with ether.

The strength of P.P.D. is measured in tuberculin units (1 T.U. is equivalent to .00002 mg. of standard P.P.D. in 0.1 cc. obtained from the British Ministry of Agriculture).

The main points to be considered when doing the tuberculin test are: 1. The injection must be intradermal.

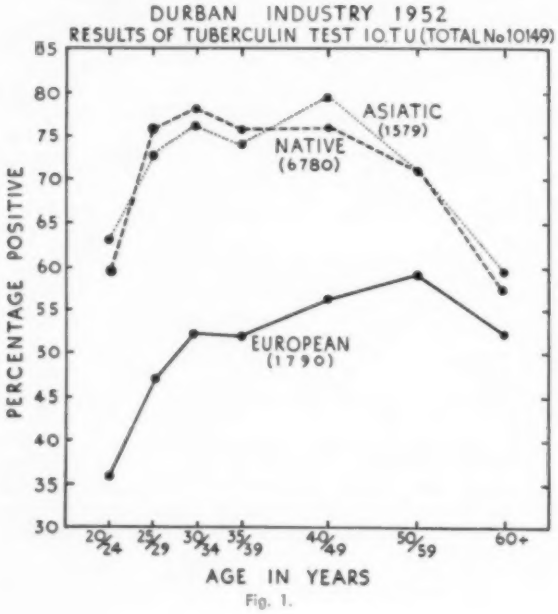

Fig. 1.

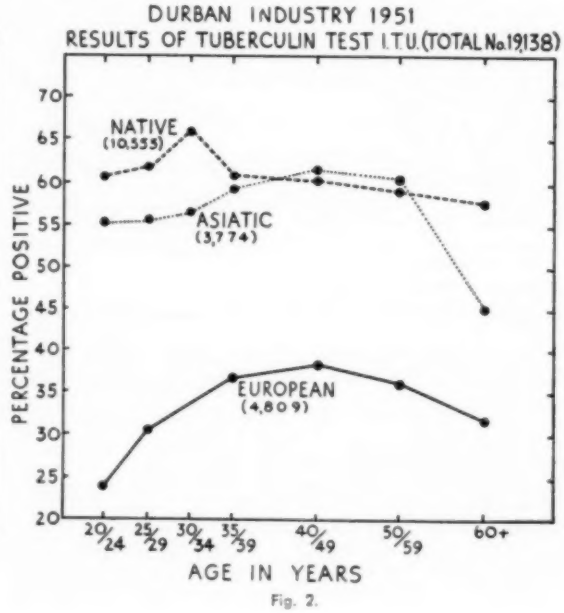

Fig. 2.

TABLE I.—ANALYSIS OF INDIVIDUALS TUBERCULIN-TESTED WITH 1 T.U.

Age	European			Native			Asiatic			Total
	Pos.	*Neg.*	*% Pos.*	*Pos.*	*Neg.*	*% Pos.*	*Pos.*	*Neg.*	*% Pos.*	
20-24	201	619	24·5	974	617	61·2	623	507	55·1	3,541
25-29	246	561	30·5	1,503	914	62·2	409	329	55·4	3,962
30-34	260	505	33·9	1,485	749	66·5	329	246	57·2	3,574
35-39	237	419	36·1	1,084	666	61·9	286	200	58·9	2,892
40-49	391	768	33·7	1,106	727	60·3	338	203	62·5	3,533
50-59	187	322	36·7	373	259	59	136	88	60·7	1,365
60-	30	63	32·3	55	43	56·1	36	44	45	271
Total	1,552	3,257	32·3	6,580	3,975	62·3	2,157	1,617	57·2	19,138

TABLE II.—ANALYSIS OF INDIVIDUALS TUBERCULIN-TESTED WITH 10 T.U.

Age	European			Native			Asiatic			Total
	Pos.	*Neg.*	*% Pos.*	*Pos.*	*Neg.*	*% Pos.*	*Pos.*	*Neg.*	*% Pos.*	
20-24	189	325	36·8	919	621	59·7	243	143	62·9	2,440
25-29	124	137	47·5	1,230	391	75·9	232	83	73·7	2,197
30-34	157	139	53	1,191	327	78·5	184	56	76·7	2,054
35-39	130	118	52·4	607	193	75·9	148	52	74	1,248
40-49	183	139	56·8	669	209	76·2	202	51	79·8	1,453
50-59	62	42	59·6	211	83	71·8	92	36	71·9	526
60-	24	21	53·3	75	54	58·1	34	23	59·6	231
Total ..	869	921	48·6	4,902	1,878	72·3	1,135	444	71·9	10,149

2. The quantity of P.P.D. given should preferably be measured by the weal raised in the skin rather than by the scale marked on the syringe. The weal raised in the skin by 0.1 cc. of P.P.D. measures approximately 7-8 mm. in diameter.[1] This method of measuring the amount of P.P.D. injected was developed because it was found that most syringes leaked slightly in use, with the result that the quantity of P.P.D. delivered through the needle did not always correspond to the measurements on the syringe.[2]

3. Tests should not be read too soon because of the appearance of non-specific reactions; 72 hours has been found to be the optimum period between injection and reading of the reaction.[3]

4. Induration alone is measured and not the local erythema.

5. There is difference of opinion to-day as to what constitutes a positive reaction. On this survey this was taken to mean an area of induration the transverse diameter of which measured 6 mm. or more.[4]

Both X-ray and tuberculin surveys were arranged on a voluntary basis and the response was most satisfactory. A small percentage however wanted the X-ray but refused the intradermal test. A considerable wastage of effort was caused by the non-appearance of people for the reading of the test, but this appears to be unavoidable.

Following the tuberculin injection the individual was X-rayed, and, in the course of making out the X-ray card, various items of statistical information were obtained. This information made possible the classification of findings into age, sex and occupational groups as well as disease groups.

TUBERCULIN-TESTING RESULTS

The total number X-rayed of all races was 36,510, out of which tuberculin results were recorded in 29,287 cases (80.2%). In 1951 1 T.U. was employed, but as the reactions seemed to be unduly weak, a stronger dose, viz. 10 T.U. (.0002 mg.), was used in 1952 as the initial test. The results are classified by race and age-groups in Tables I and II, and shown graphically in Figs. 1 and 2.

X-RAY RESULTS

Of the 36,510 persons X-rayed during this period 15,878 were Natives (43%), 7,184 Asiatics (20%), 2,555 Coloureds (7%) and 10,893 Europeans (30%). The race and sex classification is shown in Table III.

TABLE III.—PERSONS X-RAYED

	Male	*Female*	*Total*
European	8,627	2,266	10,893
Native	15,707	171	15,878
Asiatic	6,095	1,089	7,184
Coloured	1,109	1,446	2,555
All Races	31,538	4,972	36,510

The X-ray results were classified (see Table IV) into 4 main occupational groups depending roughly on the amount of physical effort expended during working hours:

(i) *Skilled Workers:* all forms of light and medium physical labour, e.g. artisans, electricians, painters, machine workers, etc.

(ii) *Unskilled Workers:* all forms of heavy labour, e.g. labourers.

(iii) *Clerical and Commercial Workers:* all forms of sedentary indoor and non-physical occupations, e.g. clerks, typists, storemen and professional men.

(iv) *Domestic and Unspecified Workers:* occupations not belonging to the above 3 groups, e.g. canteen workers, night watchmen, gatekeepers, etc.

TABLE IV.—PERSONS X-RAYED

Occupation Group	*European*	*Native*	*Asiatic*	*Coloured*	*All Races*
Skilled	5,624	3,852	6,147	2,450	18,073
Unskilled	17	10,323	191	83	10,614
Clerical and Commercial	3,411	160	91	22	3,684
Unspecified ..	1,841	1,543	755	—	4,139
Totals	10,893	15,878	7,184	2,555	36,510

The X-ray shadows produced by tuberculous lesions in the lung were roughly divided in this survey into 2 main groups, viz. (1) those considered active, showing X-ray densities which were homogeneous, with an ill-defined fluffy border either rounded or irregular in shape, and (2) those which were thought to be inactive, showing on X-ray discrete and nodular densities with a well-defined border, with strand-like or linear shadows sharply outlined, and with or without partial or complete calcification.

Classification in this simple manner is often impossible, and to aid in the diagnosis sputum-tests were performed on all individuals who had evidence of any 'suspicious' lesion. Great difficulty was experienced in obtaining a positive sputum (or any sputum for that matter) from the non-Europeans who attended for further examination. Sputum-bottles were issued, with detailed instructions, but more often than not they were not returned or arrivep back either leaking or contaminated. The ideal (Crimm [5]) is to have gastric analyses and cultures in all individuals who have 'positive' X-rays. Owing to shortage of staff and lack of co-operation on the part of those concerned (they all 'felt 100% fit') this ideal was impossible to achieve.

Histories, too, proved unreliable, many non-Europeans with gross disease denying all knowledge of any chest complaints.

Of 36,570 individuals X-rayed 35,306 (96.7%) were found to have normal chests.

Only 1 case of active primary pulmonary tuberculosis was noted.

Active post-primary or re-infection type of pulmonary tuberculosis was diagnosed in 239 (0.65%) of those X-rayed. Four cases of tuberculous pleural effusion were noted, and one with tuberculosis combined with pneumokoniosis. Thus the total showing evidence of active pulmonary tuberculosis amounted to 245 (0.67%) (see Tables V and VI).

The cases showing healed or inactive lesions numbered 434 (1.2%). (See Tables V and VI.) Cases from this group may at a later date 'break down', but on present X-ray findings and the absence of positive sputa they remain classified as inactive.

TABLE V.—ANALYSIS OF X-RAY PULMONARY TUBERCULOSIS FINDINGS IN RACE AND OCCUPATION GROUPS

	Male				Female				
	Skilled	Unskilled	Clerical	Unspecified	Skilled	Unskilled	Clerical	Unspecified	Totals
EUROPEAN									
Total number X-Rayed	5,009	17	2,072	1,529	615	0	1,339	312	10,893
No Evidence of P.Tbc.	4,946	17	2,049	1,519	611	0	1,337	311	10,790
Evidence of Active P.Tbc.	5	0	6	2	0	0	1	0	14
% with Active P.Tbc.	0·09%	—	0·29%	0·13%	—	—	—	—	0·13%
Evidence of Inactive P.Tbc.	58	0	17	8	4	0	1	1	89
% Inactive P.Tbc.	1·2%	—	0·82%	0·5%	0·65%	—	—	—	0·82%
Evidence of Active or Inactive P.Tbc.	63	0	23	10	4	0	2	1	103
% of P.Tbc. Active or Inactive	1·3%	—	1·1%	0·6%	0·65%	—	—	—	0·95%
COLOURED									
Total Number X-Rayed	1,007	83	19	0	1,443	0	3	0	2,555
No evidence of P.Tbc.	980	82	19	0	1,428	0	3	0	2,512
Evidence of Active P.Tbc.	10	0	0	0	7	0	0	0	17
% with active P.Tbc.	0·99%	—	—	—	0·41%	—	—	—	0·67%
Evidence of Inactive P.Tbc.	17	1	0	0	8	0	0	0	26
% with Inactive P.Tbc.	1·68%	—	—	—	0·55%	—	—	—	1·02%
Evidence of Active and Inactive P.Tbc.	27	1	0	0	15	0	0	0	43
% of P.Tbc. both Active and Inactive	2·68%	—	—	—	1·04%	—	—	—	1·68%
ASIATIC									
Total number X-Rayed	5,538	191	89	277	609	0	2	478	7,184
No evidence of P.Tbc.	5,410	187	86	268	601	0	2	478	7 032
Evidence of Active P.Tbc.	54	3	2	1	4	0	0	0	64
% with Active P.Tbc.	0·98%	1·6%	2·24%	—	0·65%	—	—	—	0·89%
Evidence of Inactive P.Tbc.	74	1	1	8	4	0	0	0	88
% with Inactive P.Tbc.	1·3%	—	—	2·8%	0·65%	—	—	—	1·2%
Evidence of Active and Inactive P.Tbc.	128	4	3	9	8	0	0	0	152
% of P.Tbc. both Active and Inactive	2·31%	2·09%	3·36%	3·2%	1·3%	—	—	—	2·1%
NATIVES									
Total Number X-Rayed	3,852	10,308	154	1,393	0	15	6	150	15,878
No Evidence of P.Tbc.	3,732	10,081	149	1,364	0	15	6	150	15,497
Evidence of Active P.Tbc.	43	87	3	17	0	0	0	0	150
% with active P.Tbc.	1·1%	0·84%	1·9%	1·2%	—	—	—	—	0·94%
Evidence of Inactive P.Tbc.	77	140	2	12	0	0	0	0	231
% with Inactive P.Tbc.	1·99%	1·4%	1·3%	0·86%	—	—	—	—	1·5%
Evidence of Active and Inactive P.Tbc.	120	227	5	29	0	0	0	0	381
% of P.Tbc. both Active and Inactive	3·1%	2·2%	3·2%	2%	—	—	—	—	2·4%

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		24	40	Mauve/Blue
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TABLE VI.—SUMMARY OF ALL PULMONARY TUBERCULOSIS FINDINGS

	European	%	*Non-Europeans**	%
Total X-Rayed	10,893		25,617	
Number Normal	10,686	98·09	24,620	97·7
With Evidence of Active P. Tbc.	14	·13	231	·9
With Evidence of Inactive P. Tbc.	89	·82	345	1·3
With Evidence of P. Tbc. Active or Inactive ..	103	·95	576	2·2
Other Chest Abnormalities ..	104	·95	421	1·6

* This includes all Coloureds, Asiatics and Natives X-rayed.

Non-Tuberculous Lesions. Ones with chest abnormalities other than tuberculous lesions totalled 525 (1.4%) (see Table VII).

The largest group were those who showed on X-ray an enlarged heart shadow or aortic shadow. They numbered 228.

The other large group (112) were those in whose X-rays thickened or calcified pleura was noted.

Fourty-four showed X-ray evidence of bronchiectasis and /or cystic disease.

The other important pathological chest conditions found on X-ray are listed in Table VII.

TABLE VII.—SUMMARY OF FINDINGS OTHER THAN THOSE OF TUBERCULOSIS

	European	*Non-European**
Cardiovascular Lesions	50	178
Thickened Pleura	11	101
Acute and Chronic Infections ..	5	15
Pneumokoniosis	—	8
Bronchiectasis and Cystic Disease	7	37
Intrathoracic New Growths ..	—	3
Miscellaneous	31	79
Total	104	421

* This includes all Coloureds, Asiatic and Natives X-rayed.

DISCUSSION

It is not possible to draw conclusions or make definite statements from this brief preliminary report. From the material available, however, there are certain points which merit attention.

All the tuberculin-testing and the reading of the tests was performed by the same individual. Similarly, all the minifilms and 'large' X-rays were read by that same person. This also applied to those cases which were later seen at the special industrial follow-up clinic. Garland [6] states that there is an average error of 16% in inter-individual comparisons (different readers) while reading minifilms and 8% when the same person read the same set of films twice. The author feels that this error may be considerably reduced in this series because any individual whose X-ray was in any way suspect was recalled to the follow-up clinic for further study and disposal. (The tendency was thus to 'over-read'.) Serious errors of omission in reading these films have as yet not appeared.

If an analysis of these results may be made at this stage, it will be noted that with the same strength of P.P.D. and with the same diagnostic criteria, the European tuberculin graph differs radically from that of the non-European curves.

The Native and Asiatic curves show much the same degree of tuberculin allergy, and reach a positive reaction-rate of 66% and 80% of those tested with the use of 1 T.U. and 10 T.U. respectively. On the other hand the highest European figure with the use of 1 T.U. is just under 27% of those tested, and with the use of 10 T.U. 60%. These latter 2 percentages also seem to appear in a slightly later age group than in the non-European graph.

The X-ray results too, show a similar difference between the European and non-European groups. Once again the Native and Asiatic figures are very similar. There were 0.89% of Asiatics and 0.94% of Natives with evidence of active pulmonary tuberculosis. This is to be compared with the European figure of 0.13%.

0.95% of Europeans showed evidence of either old or active pulmonary tuberculosis compared with 2.1% and 2.4% in the Asiatic and Native groups respectively.

If we assume that each individual in a group has the same (small) probability p of contracting tuberculosis, then the standard error (s.e.) of a random sample is very nearly $\sqrt{n}$ where n is the number of cases observed.[7] Thus the 103 European cases (Table VI) have a standard error of about 10.15 and we should expect further examination to yield a figure of about 103 ± 2 x s.e., i.e. between 82.7 and 123.3, i.e. between 0.76% and 1.13%.

These limits would be 95% confidence limits in random sampling. However in this case the samples are not random and should be treated with caution. Bradbury [8] studied the effectiveness of mass X-ray survey work and found that the minimal requirement to discover at least half the tuberculous subjects in any group is that 70% of that group present themselves for X-ray. It is considered that this requirement was greatly exceeded in all our cases since, although the survey was established on a voluntary basis, many firms insisted that all their staff be X-rayed.

It does, however, appear that the differences found in the racial groups (Table V) are significant, but those between different categories of workers are probably not.

For example, the standard error of the 43 skilled Natives with active tuberculosis is $\sqrt{43}=6.557$. Hence 95% fiducial limits are about 30 and 56 i.e. 0.78% to 1.45%. The lower limit overlaps the value 0.84% for unskilled Native workers, and hence the difference cannot be regarded as significant.

SUMMARY

1. Of 36,510 individuals X-rayed on 70 mm. minifilms, 35,306 (96.7%) were found to have normal chests.

2. Fourteen (0.13%) Europeans were found to show evidence of active pulmonary tuberculosis.

3. Two hundred and thirty-one (0.9%) non-Europeans showed evidence of active pulmonary tuberculosis.

4. The difference between the incidence of pulmonary tuberculosis in the different categories of workers is not considered significant, but the incidence in the different racial groups is believed to be statistically important.

My thanks to Dr. B. A. Dormer for his advice and for permission to publish this report. I also wish to express my appreciation to Mr. E. A. Pillinger, of the Mass X-ray Services, for his invaluable assistance and to Mr. S. E. Cruise, Senior Lecturer in Statistics, Natal University, for the statistical analysis.

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WORLD CONFEDERATION FOR PHYSICAL THERAPY

The first Congress of the World Confederation for Physical Therapy held at the Central Hall, Westminster, London, from 7 to 12 September 1953 was attended by 1,750 physical therapists doctors and members of allied professions. Miss L. E. Dyer, hon. editor of *Physical Theraphy*, the official journal of the South African Society of Physiotherapists, represented the South African Society.

The programme of the Congress, which was opened by the Rt. Hon. Iain Macleod, M.P., British Minister of Health, consisted of lectures, papers and demonstrations by members of the medical profession and by physiotherapists, each only being devoted to a particular theme as follows:

Physical Therapy in Neuromuscular Disorders, Physical Therapy in the Rheumatic Diseases, Physical Therapy in Diseases of the Chest, Physical Therapy in Industry, Papers by Physical Therapists on Treatment and Research.

Visits were paid to 30 hospitals, rehabilitation centres and other centres where practical physiotherapy was demonstrated.

There were a large number of social functions including a reception at Guildhall, at which the Lord Mayor of London and the Lady Mayoress received the guests.

The Second General Meeting of the World Confederation was held during the Congress on Thursday, 10 September 1953. Representatives from 25 countries were present, and official delegates from the 12 member-countries of the World Confederation, as follows: Australia, Canada, Denmark, Finland, France, Great Britain, New Zealand, Norway, South Africa, Sweden, United States of America and Western Germany.

Miss Mildred Elson (U.S.A.) was re-elected President, Miss W. M. McAllister (Great Britain) First Vice-President, Mrs. S. Coleridge (Sweden) Second Vice-President, and Mrs. R. Agersnap (Denmark) Third Vice-President. As the result of a ballot Australia and France were elected to fill two vacancies on the Executive Committee.

The Executive Committee at its meeting following the general meeting re-appointed Miss M. J. Neilson (Chartered Society of Physiotherapy, Great Britain) as Hon. Secretary and Hon. Treasurer.

The Executive Committee discussed its programme for the next three years and agreed to publish a leaflet for general circulation, explaining the uses of physiotherapy. It was also agreed to circulate information concerning standards of training and examination in the member-countries of the World Confederation, bursaries and grants available for training and opportunities for working in member-countries. The publication of a six-monthly bulletin to interested organisations will continue.

It was agreed to accept the invitation of the American Physical Therapy Association to hold the next Congress in New York in 1956.

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Tablets of 'Ansolysin' for oral use may be obtained in containers of 50 or 500 + 40 mg. and containers of 50 or 500 + 200 mg. The solution for injection is available in multi-dose containers of 10 cc. (5 mg. per cc.) and in multi-dose containers of 25 cc. (25 mg. per cc.). 'Retard' solution can be obtained in multi-dose containers of 25 cc. (25 mg. per cc.) in polyvidone solution with 0.5% ephedrine hydrochloride.

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*Pamine Bromide** is a brand of epoxymethamine bromide, or epoxytropine tropate methylbromide produced by the Upjohn Company. It is supplied in 2.5 mg. tablets (put up in bottles of 100).

Pamine, a new parasympatholytic agent, effectively inhibits gastric secretion, producing both a decrease in total volume and a decrease in acidity. It also decreases gastro-intestinal motility while producing little, if any, central nervous system stimulation. It is indicated when anticholinergic effects, either spasmolytic or antisecretory, are desired. It is useful as an adjunct in the management of peptic ulcer and gastric disorders associated with hyperacidity and hypermotility; the post-gastrectomy 'dumping syndrome'; excessive sweating; and excessive salivation. It may also prove useful in the symptomatic relief of hyperemesis gravidarum and 'functional' nausea and vomiting, ureteral and vesical spasms, and acute non-specific diarrheas associated with hypermotility of the gastro-intestinal tract and dirrahea associated with certain antibiotics.

The average dose is 2.5 mg. orally ½ hour before meals and 2.5 to 5 mg. at bedtime. However, as with other potent anticholinergic drugs, there is marked variability in individual clinical response and tolerance to the side effects of the drug. The side effects are typical of the anticholinergic drugs, the most frequent being dryness of the mouth. Others, such as blurred vision, constipation, disturbances of urination, etc., occur less frequently and may decrease with continued administration of the drug or decreased dosage.

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*Cortef** is a brand of hydrocortisone (17-hydroxycorticosterone-compound F) synthesized in the Research Laboratories of The Upjohn Company. It is available in 10 mg. tablets (put up in bottles of 25) for oral use, and as Cortef Acetate Ointment for topical application to the skin.

The over-all therapeutic and hormonal effects of hydrocortisone administered orally are similar to cortisone acetate. Smaller amounts of hydrocortisone are needed to effect equivalent improvement in patients with rheumatoid arthritis (70 mg. hydrocortisone: 100 mg. cortisone).

In the oral administration of Cortef, the daily dosage is given in 3 or 4 divided doses. This will vary with the individual patient and severity of condition. For both initial suppression and maintenance therapy the dose is 70% of the cortisone dosage. Precautions and contraindications are the same as for cortisone.

Cortef Acetate Ointment is available containing *Cortef Acetate** 25 mg. per g. (2.2%), or 10 mg. per g. (1%) in a bland, non-irritating base. Both strengths are put up in 5 g. tubes. The ointment is applied topically to the skin, exerting a rapid and prolonged anti-inflammatory effect. Local oedema, hyperaemia, cellular infiltration, and pruritus, particularly in allergic conditions, are controlled. It does not appear to interfere with antibody formation, or with antigen-antibody union, and because of the small amounts of hydrocortisone present it does not produce the undesirable effects sometimes resulting from systemic administration of cortisone and hydrocortisone. It is useful in the treatment of contact dermatitis, pruritus ani and vulvae, atopic dermatitis, neurodermatitis, and seborrhoeic dermatitis.

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BOOK REVIEWS : BOEKRESENSIES

MONOGRAPHS ON PAEDIATRICS

Advances in Pediatrics, Volume VI. 1953. Edited by S. Z. Levine. (Pp. 323. $7.50). Chicago: Year Book Publishers, Inc. 1953.

Contents: 1. Lymphosarcoma in Childhood. 2. Preventitive Prenatal Pediatrics. 3. Intestinal Obstruction in the Neonatal Period. 4. Hemolytic Disease of the Newborn. 5. Pulmonary Pathology in the Newborn. 6. The Lipoidoses. 7. Megaloblastic Anemia of Infancy. Subject Index. Author Index.

This volume contains 7 authoritative monographs on important and interesting epadiatric subjects. The articles are contributed by American authors, with the exception of that written by Professor van Creveld of Amsterdam on the lipoidoses. Four of the subjects are concerned with disorders of the newborn period: congenital defects, pulmonary pathology, intestinal obstruction, and neonatal haemolytic disease.

(1) The concept that maternal rubella, acquired early in pregnancy, may damage the foetus has focussed attention on the possibility that a variety of agents, all not necessarily of bacterial origin, can be responsible during pregnancy for foetal malformation and mortality. Ingalls, in a thought-provoking article, indicates several possible aetiological factors and the scientific approach to their detection and he discusses the problem of preventing congenital malformations.

(2) Difficulties of interpreting clinically pathological lung conditions of the newborn infant are stressed by Edith Potter, who offers an excellent review of the embryological development and normal anatomy and physiology of the lungs, and then goes on to deal with pathological findings in important neonatal pulmonary diseases such as pneumonia, haemorrhage, hyaline membrane, emphysema and pneumothorax.

(3) An article of especial practical interest is that contributed by Koop on the subject of intestinal obstruction. Diagnosis and aetiological factors concerned, including those of neurogenic origin, are discussed in some detail, and the treatment advocated is clearly set out.

(4) Levine and his collaborators present a critical survey of the clinical features, diagnosis, prevention and treatment of Rh haemolytic disease, kernicterus and the contraversial subject of A-B haemolytic disease. This article merits careful study.

Lymphosarcoma in childhood is discussed from the clinical and therapeutic aspects by Dargeon, who does not believe that surgical intervention is necessarily contra-indicated in the child. In his view, surgery, irradiation and drugs all have their therapeutic place and the method of treatment to be employed will depend on the individual case.

Infantile megaloblastic anaemia is the subject of a contribution by Zuelzer and Rutsky, who stress its growing complexity as new facts are brought to light.

The article on lipoidoses is concisely written and several interesting points are raised, as for example the apparent relationship between the Tay-Sachs and Niemann-Pick diseases. A good description of gargoylism is given although the author questions the desirability of including this disorder among the lipoidoses

This volume is essentially practical and emphasis is placed throughout on diagnosis, treatment and prevention. The subjects presented are all timely and of importance to paediatrician and general practitioner alike. The book is well illustrated and maintains the high standard set by preceding volumes in the series.

W. E.

THORACIC SURGERY

A Practice of Thoracic Surgery. By A. L. d'Abreu, O.B.E., Ch.M., F.R.C.S. (Pp. 591 + viii, with illustrations. 80s.) London: Edward Arnold & Company. 1953.

Contents: Part I. Anatomical and Physiological Considerations. 1. Anatomical Considerations. 2. Lung Function. 3. The Assessment and Preparation of Patients for Maior Thoracic Operations. 4. Operative Technique. 5. Post-operative Care of the Thoracic Patient.

Part II. The Surgery of Pyogenic Infection. 6. Empyema. 7. Lung Abscess. 8. Bronchiectasis.

Part III. Pulmonary Tuberculosis. 9. Collapse Therapy. 10. Resection Operations and the Drainage of Cavities. 11. Tuberculosis Disease of the Pleura and Chest Walls.

Part IV. 12. Neoplasms of the Lung and Trachea.

Part V. The Surgery of the Mediastinum. 13. Surgery of the Heart, Great Vessels and Pericardium. 14. Angiocardiography. 15. Cardiac Catheterization. 16. Congenital Acyanotic Heart Disease. 17. Congenital Cyanotic Disease. 18. Congenital Abnormalities of the Oesophagus. 19. Oesophageal Obstructions. 20. Mediastinal Tumours.

Part VI. Some Miscellaneous Conditions. 21. Surgical Aspects of Pulmonary Emphysema. 22. Pulmonary Hydatid Disease. 23. Thoracic Injuries.

Part VII. Thoraco-Abdominal Surgery. 24. Surgery of Cardio-oesophageal Obstruction and the Upper Third of the Stomach. 25. Thoracic Approach to the Spleen. 26. Diaphragmatic Hernia. 27. Subphrenic Abscess. Index.

The reviewer, having had the opportunity of working with Col. d'Abreu at a military hospital in Italy, is biased, but the surgical skill and judgment that the author displayed there are amply reflected in this refreshing volume. The book is well written, profusely illustrated and beautifully produced. It covers the whole field and is well balanced, giving due regard to accepted practice but not excluding more recent work. Two notable omissions are the abdomino-sternal split for the lower and of the oesophagus and the operations devised for closure of inter-atrial septal defects.

There are, however, many minor printing and spelling errors in this first edition, viz. 'j' instead of 'i' 10th line up on page 45, 'icyanosed' instead of 'cyanotic' on the 5th line on page 52, adrenaline coupled with 'is' on the 17th line of page 68, 'line' instead of 'limb' after axillary thoracotomy on page 79, 'acusative' instead of 'accusative' on 20th line of page 262, 'Barrett' for 'Barrett' on the 2nd line on page 424, 'right' instead of 'left' on the 9th line on page 449 etc. In several instances the text does not correspond with the X-ray reproductions; e.q., the lesion illustrated on page 187, fig. 9.9a, is on the left whereas the text describes it on the right side; fig. 9.20, page 205, shows 5 ribs resected whereas the text describes only 4; again fig. 18.4 on page 413 shows a resected 4th rib described in the text as the 5th.

In a few instances the text is possibly incorrect; e.g. on page 201 it is stated that the pull of adhesions is maximal in inspiration whereas in fact the pull is maximal on expiration; the figure of 75% of growths being visible bronchoscopically (page 273) is surely far too high, as is the classical postero-lateral incision described on page 279 as extending to the 2nd spinous process. It is also incorrect to state in the 4th line on page 375 that there is no enlargement of the left auricle in patent ductus.

Most text-books are out of date on publication but such a criticism cannot be levelled at this eminently readable and comprehensive book, which should be read, not only by every surgeon interested in the art of surgery, but also by every physician, whose interest will be roused by the logical application of surgery to the various pathological and physiological disorders described.

D. I. A.

TREATMENT OF EYE DISEASES

Office Management of Ocular Diseases. By William F. Hughes, Jr., M.D. (Pp. 452, with 120 illustrations. $9.00) Chicago: The Year Book Publishers, Inc. 1953.

Contents: 1. Vision. 2. Refraction. 3. Lids. 4. Lacrimal Apparatus. 5. Orbit. 6. Disorders of Ocular Motility. 7. Conjunctiva. 8. Cornea. 9. Sclera. 10. Glaucoma. 11. Intraocular Inflammation. 12. Lens and Vitreous. 13. Conditions of the Ocular Fundus. 14. Neuro-Ophthalmology. 15. Ocular Injuries. 16. Radiation Treatment. 17. Ophthalmic Formulary. Index.

In compiling this small volume the author has not covered any new or special ground but he has arranged his material in an interesting way. He has set out to bring treatment to the busy practitioner and has assumed that he knows what he is treating. Clinical description is absent here, but the field covered is nevertheless the whole of ophthalmic practice. Therapeutic measures are mentioned, not described; on the other hand some diagnostic measures are described in detail. Treatment is on the whole sound and conservative.

The most interesting portion is the final chapter called Ophthalmic Formulary, which contains an exhaustive survey of all drugs and preparations used, together with doses and trade names of the manufacturers, all in proper compartments. For this reason alone the book is worth having.

The method of presentation is American. The print is very readable and the photographs and diagrams of excellent quality.

J. G. L.

CORRESPONDENCE : BRIEWERUBRIEK

CHLOROMYCETIN FOR A BABY

To the Editor—This morning I was called to see a 6 months-old baby. I found that the child had a normal temperature, injected pharynx and green diarrhoea. On the table in the same room stood a bottle of chloromycetin palmitate. On questioning the father, I learned that this was the 3rd bottle the baby had been given in the last 2 weeks, but the baby had had at least 10 bottles in its short life and that this had been given to them by a chemist without a doctor's prescription.

This is not the first occasion that I have had this experience and I am wondering if there have been any cases of fatal agranulocytosis. Furthermore I don't think that chemists are qualified to give chloromycetin to patients, and I would suggest that my other colleagues be warned through the *Journal* to look out for this practice.

I would also like to know whether any disciplinary action could be taken in such a case.

P.O. Box 77 D. T. Hendrie
Welkom
20 December 1953

THE NATIONAL MEDICAL SERVICE

To the Editor—The editorial on *The National Medical Service* in the *Journal* for 5 December 1953 is inaccurate and unfair in its references to the Report of the Gluckman Commission. The Commission did not recommend that the medical profession should be 'mainly converted into a Government Service', nor 'that medical practice should be under lay control'.

It recommended the establishment of a National Health Service under controls distinct from those of the public service. These controls were to be themselves predominantly professional, and chosen mainly by the profession. The National Health Board—the top executive—was to have a majority of medical members in whose selection the profession would have the principal say. Perhaps even more important, the special personnel commission ('to deal with the appointments, promotions and general conditions of service of the personnel employed in the various sections of the National Health Service') was to consist of 3 members of whom 2 would be appointed by the National Health Congress—itself a purely professional body—but, as 'the first Personnel Commission, which will function during the critical early years of the new Service, will necessarily be appointed before the National Health Congress comes into being', the Commission recommended 'that the Medical Association of South Africa be invited to submit a short list from which the two professional members should be selected'.

A 'medical service for the middle-income group on the basis of the medical aid societies', as advocated by you and Dr. J. P. de Villiers, may or may not be a good thing, but it could never be a 'national' service, for the simple reason that the middle-income group *in South Africa* does not, as in Australia, comprise nearly 75% of the population but, at the most, only 20%. For the remaining 80% you suggest 'a free medical service'—which would be either a Government service, which earlier you deprecate, or one conducted by local authorities, which of course means 'lay control'.

Your 'national' curative service is thus a curious hybrid—a medical aid scheme for 20% of the people and a State service for 80%—and both parts of it under lay control. For most medical aid societies are not controlled by doctors, but by committees consisting mainly of laymen.

In short, it is you—not the Gluckman Commission—who advocate a service in which the majority of the profession would fall directly under Government control and the remainder under other lay control. The Gluckman Commission were at pains to devise a National Health Service in which professional control was ensured.

G. W. Gale

P.O. Box 1525,
Durban
22 December 1953

THE MEDICAL COUNCIL ELECTION

To the Editor—The naïveté of Dr. Lance Impey in his letter to the *Journal* of 4 December 1953 *re* the Medical Council election surpasses all understanding.

Does Dr. Lance Impey really believe that the elected practitioners to the Council have always been left with a free hand to consider all problems objectively, without being influenced by the individual's particular professional interest, his status in the body politic, and his own particular class interest?

Dr. Impey least of all should complain of the type of propaganda allegedly now introduced into the recent elections, since he has had the full use of the medical press, and has used it to the utmost, without the possibility of being either refuted or contradicted timeously, because of delays in publication.

Dr. Impey must surely realise that the Medical Council, apart from the functions he has enumerated for it, exercises its right to make policy and in fact is the body which advises the Minister and so the Government on matters relating to the practice of medicine. Once a body is concerned with this function it has surely entered into the realm of politics, and in politics every method of propaganda provided it does not offend against the law or ethics, is reasonable and fair.

Would Dr. Impey suggest that the average candidate entering for the Medical Council Election has an opportunity of putting forward propaganda equal to that of the candidate who already does so in advance by virtue of a teaching post, or his association with a large institution which automatically advertises his name to the profession at large over years?

Can we now expect Dr. Impey to move immediately for the institution of a more equitable system of election to Council, whereby the candidates for the Council should be chosen by the profession in areas where they reside and where it is possible for the electorate to truly evaluate the policy and character of the candidate.

Boksburg-Benoni Hospital, E. W. Turton
17 December 1953 E. Meltzer

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Die Mediese Vereniging van Suid-Afrika

AGENCY DEPARTMENT : AGENTSKAP-AFDELING

KAAPSTAD : CAPE TOWN

Posbus 643, Telefoon 2-6177 : P.O. Box 643, Telephone 2-6177

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(1387) Boland. Nucleus praktyk en goeie voorraad instrumente, ens. teen £400. Uitstekende vooruitsigte vir uitbreiding.

(1437) Prescribing practice in Transkei 90% native and therefore cash. Gross takings over £2,000 p.a. including contract of approximately £150 p.a. Little night or week-end work, definite scope for expansion. No surgery and little maternity done. Easy travelling distance from sea. Surgery for hire at £5 p.m. Owner going overseas and therefore prepared to sacrifice at £600 for quick sale.

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(1523) CAPE TOWN SOUTHERN SUBURB. Average receipts 1951/52/53 £2,900. Terms and premium to be arranged.

ROOMS TO LET

(1422) Cape Town. Waiting room and examination room available on long lease in St. George's Street building.

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(1508) (*a*) One Cambridge Portable Electrocardiograph in excellent condition; (*b*) One portable pneumothorax refill apparatus, bottle type.

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(1554) S.W.A. Assistant urgently required with view to partnership. Salary £80 per montn plus all found.

(1553) Transkei. Assistant as soon as possible for 6 or 12 months. Salary £80 p.m. Car not essential.

(1547) Mount Coke Hospital, King William's Town. Locum as soon as possible till 15 February. Salary £50 p.m. plus board, lodging and laundry.

(1558) Cape Town Suburb. Assistant from early February for 5 months (possibly with view to partnership). Minimum salary £85 p.m.

(1427) Natal. Assistant as soon as possible. Salary etc. to be arranged.

(1559) Bechuanaland. Locum tenens for 6 or 9 months or even longer. Salary £3 3s. 0d. per day, free board and lodging.

* * *

DURBAN

112 Medical Centre, Field Street. Telephone 2-4049

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(PD23) Natal. Prescribing practice particularly suitable for a woman doctor interested in obstetrics and gynaecology. Total gross receipts for 1950, £1,570; 1951, £1,595; 1952 (6 months), £1,340; 1953 (3 months), £382. Premium £1,250, includes furniture, fittings, instruments, drugs and existing book debts.

(PD24) Natal South Coast. Practice suitable for doctor who does not want full-time work. £250 for drugs, dressings, instruments, etc. No charge for goodwill. Small house on ½ morgen, £1,600. Immediate occupation.

LOCUMS REQUIRED

(72) Durban. Locum required for January and February with view to assistantship. General practice. Salary to be discussed with the Principal.

(73) Near Durban. Locum for January and February. £2 12s. 6d. per day, all found. Must have own car.

(74) Zululand. Locum for February. £2 12s. 6d. per day, all found. Own car necessary.

(75) Durban. 1 January. Locum view toassistantship/partnership. General practice. Salary to be discussed.

JOHANNESBURG

Medical House, 5 Esselen Street, Telephone 44-9134-5, 44-0817
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ASSISTANTS LOCUMS REQUIRED

(L V491) Assistent om op 1 Februarie te begin. Verkieslik iemand met ondervinding. Salaris £120 p.m. Moet eie losies en petrol betaal. Laasgenoemde ongeveer £10 p.m. Moontlikhede van vennootskap vir regte persoon. Randse hospitaaldorp.

(L V498) Naby Johannesburg. Assistent om so spoedig moontlik te begin. Chirurgie word gedoen. Verkieslik iemand met ondervinding. Salaris, toelaes en kommissie om gereël te word. Vooruitsigte van vennootskap.

(L V480) Reef hospital town. Assistant to start as soon as possible. Preferably experienced man. Anaesthetic experience will be a recommendation.

(L V486) O.V.S. Plaasvervanger vanaf 26 Mei tot 1 Augustus. Salaris £2 10s. 0d. per dag, vry losies, petrol en olie *of* 'n kar kan verskaf word. Getroude persoon kan in hoof se huis woon. Sal ook 'n dame pas.

(L V489) Reef town. Locum for February. Terms £3 10s. 0d. per day. Mainly day practice. Locum could live in Johannesburg.

(L V503) Reef, native practice. Locum for three weeks as from 23rd January. No night work. Own car necessary. Locum could live in Johannesburg.

PRAKTYKE TE KOOP PRACTICES FOR SALE

(Pr S98) Ou Vrystaatse praktyk. Verpleeginrigting waar heelwat chirurgie onderneem kan word. Een aanstelling. Die *netto* jaarlikse inkomste oorskry £2,300. Woonhuis te huur teen £12 p.m. Premie verlang is £1,300 en sluit medisyne ter waarde van £500, instrumente £200 en meubels £120, in. Terme kan gereël word.

(Pr S99) North of Johannesburg. Well-established practice. Large European branch, also Native cash branch. Gross income £6,500 p.a. Will suit two doctors. Premium for outright sale £4,750 and includes furniture and instruments and X-ray and screening units. Long introduction (approximately 6 months) will be given. Partnership with view to taking over the whole practice will be considered.

REQUIRED

Partnership or locum or assistantship, both with view to partnership, required in Johannesburg, by doctor with own car, and a surgery in the Northern Suburbs.

City of Johannesburg

VACANCY

Applications are invited for the following vacant position in the City Health Department:

Assistant Resident Medical Officer (Waterval Hospital): Salary £900 per annum fixed, plus statutory cost of living allowance less £202 per annum for board and lodging.

Applicants must be medical practitioners registered to practice as such in South Africa. The incumbents will be required to reside in the quarters provided and the appointment will be made for twelve months as from 1 February 1954.

Personal canvassing for appointment in the gift of the Council is strictly prohibited. Proof thereof shall disqualify a candidate for appointment.

Applications in the candidate's own handwriting on special forms to be obtained from the Central Staff Office, Room 223, Municipal Offices, must be placed in the box in Room 223, Municipal Offices, or posted so as to reach the Town Clerk not later than fourteen days of the appearance of this advertisement in this journal.

Brian Porter
Town Clerk

23 December 1953 (1378)

Provinsiale Administrasie van die Kaap die Goeie Hoop

HOSPITAALDEPARTEMENT
HOSPITAALRAADSDIENE : VAKATURE

1. Aansoek word ingewag van geregistreerde geneeshere vir aanstelling tot die volgende vakante pos:

Inrigting:
Hospitaaldepartement, Kaapstad.

Pos:
Geneesheer, Graad E, (Mediese Superintendent).

Emolumente:
£1,600 p.j. (vasgestel).

Sluitingsdatum:
30 Januarie 1954.

Aansoeke moet gerig word aan:
Die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad.

2. Die diensvoorwaardes word voorgeskryf ingevolge die Ordonnansie op Hospitaalraadsdiens nr. 19 van 1941, soos gewysig, en die regulasies wat daarkragtens opgestel is.

3. Benewens die salaris soos aangedui, is 'n lewenskostetoelae betaalbaar aan voltydse beamptes en werknemers teen bedrae wat van tyd tot tyd deur die Administrateur vasgestel word.

4. Van die geslaagde kandidaat sal dit vereis word om 'n ongemeubileerde huis of kwartiere wat by die hospitaal verskaf word gratis te bewoon, of as 'n huis of kwartiere nie beskikbaar is nie, 'n huis te bewoon wat deur die Departement goedgekeur is ten opsigte waarvan die Departement 'n bedrag van hoogstens £180 per jaar tot die huur sal bydra. Kandidate moet bereid wees om in die begin deur die Kaapprovinsie te reis vir offisiële doeleindes.

5. Die geslaagde kandidaat, indien nie reeds in die Hospitaalraadsdiens nie, moet bevredigende geboorte- en gesondheidssertifikate indien.

6. Aansoek moet gedoen word op die voorgeskrewe vorm (Staf 23), wat verkrygbaar is by die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad, of by die Mediese Superintendent van enige Provinsiale Hospitaal of by die Sekretaris van enige Skoolraad in die Kaapprovinsie.

7. Applikante moet die vroegste datum meld waarop hulle diens kan aanvaar.

(A562873)

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT
HOSPITAL BOARD SERVICE : VACANCY

1. Applications are invited from registered medical practitioners for appointment to the following vacant post:

Institution:
Hospitals Department, Cape Town.

Post:
Medical Practitioner, Grade E (Medical Superintendent).

Emoluments:
£1,600 p.a. (fixed).

Closing Date:
30 January 1954.

Applications to be addressed to:
The Director of Hospital Services, P.O. Box 2060, Cape Town.

2. Conditions of service are prescribed in terms of Hospital Board Service Ordinance No. 19 of 1941, as amended, and the regulations framed thereunder.

3. In addition to the salary indicated, a cost-of-living allowance at rates prescribed from time to time by the Administrator is payable to whole-time officials and employees.

4. The successful candidate will be required to occupy, free of charge, an unfurnished house or quarters provided at the institution or alternatively, if a house or quarters are not available, to occupy a house approved by the Department in respect of which the Department will contribute an amount of not exceeding £180 per annum towards the rental. Candidates must be prepared initially to travel throughout the Cape Province for official purposes.

5. The successful candidate, if not already in the Hospital Board Service will be required to submit satisfactory birth and health certificates.

6. Application must be made on the prescribed form (Staff 23), which is obtainable from the Director of Hospital Services, P.O. Box 2060, Cape Town, or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

7. Candidates must state the earliest date on which they can assume duty.

(A562873)

City of Cape Town

VACANCY—MEDICAL OFFICER FOR INDIGENT SICK

Applications are invited from suitable qualified practitioners under 45 years of age for the abovementioned position at a commencing salary of £960 per annum on the salary scale £960 × £36—£1,104, plus cost of living allowance at the rates approved by the Council from time to time and which at present amount to—Married rate £301 13s. 7d. per annum and Single rate £26 0s. 0d. per annum.

Qualifications and duties

Applicants must be registered Medical Practitioners. The successful candidate will be required to render medical attention to the indigent sick in their homes within the Municipal Area, and to carry out such other medical duties as may be allocated to him from time to time. A transportation allowance will be paid as per rates prescribed by the Council.

The appointment will be subject to the provisions of the Municipal Ordinance No. 19 of 1951, the Standing Orders of the Council and to the Municipal Staff Code, all as amended from time to time.

Applications in duplicate on the prescribed forms obtainable from the Senior Staff Officer, 2nd Floor, Municipal Buildings, Longmarket Street, Cape Town, should reach him not later than Monday, 25 January 1954.

Canvassing of Councillors will be a disqualification.

M. B. Williams
Town Clerk

City Hall
Cape Town
28 December 1953

8810

Natal Provincial Administration

PUPIL RADIOGRAPHERS

Applications are invited from candidates who are desirous o studying for the Diploma in Radiography Course in the Hospitals of the Natal Provincial Administration.

Applicants must hold the Matriculation or corresponding certificate with mathematics as a subject and be between 18 and 34 years of age.

A limited number of pupils only can be accepted. The course is full time, non-resident and extends over not less than 2 years.

Salary will be at the rate of £5 per month for the first 12 months and thereafter at the rate of £10 per month. In addition cost of living allowance at the present Public Service rates will be payable. If called upon to do so, pupils will be required to serve the Administration for a period of 2 years after completion of the course, at any hospital under the Natal Provincial Administration. The salary scale is at present £450 × 30—690.

Candidates will be required to pay examination and registration fees, to serve on 3 months probation and to undergo a Medical examination including blood count, before assuming duty and at intervals thereafter.

The course commences on 1 April 1954, and the successful applicants will be required to sign a contract to serve for the period of the course.

Applications on the prescribed form, which may be obtained from the Director of Provincial Medical and Health Services, P.O. Box 20, Pietermaritzburg, should reach him before 21 January, 1954.

(7947)

Siekefonds van die Suid-Afrikaanse Spoorweë en Hawens

AANSTELLING VAN SPOORWEGDOKTER : KERELAW : AANGRENSENDE BLOEMFONTEIN

Aansoeke word van geregistreerde mediese praktisyns ingewag vir aanstelling in die betrekking van Spoorwegdokter, Kerelaw en spoorwegtrajek Rhenostersprutbrug (uitsluitend) tot by Sannaspos (uitsluitend) teen 'n salaris van £807 p.j. plus 'n vervoertoelae van £125 p.j., plus die gelde en toelaes wat in die Regulasies van die Siekefonds voorgeskryf word, en met die reg om privaat te praktiseer.

Die salaris is onderhewig aan wysiging in ooreenstemming met die sensus van lede wat op 1 April van elke jaar afgeneem moet word.

Die aanstelling geskied kragtens die regulasies van die Siekefonds en opsegging van dienste is onderworpe aan vier maande kennisgewing deur een van beide partye.

Dit word verlang dat die suksesvolle applikant op Kerelaw sal woon, maar aan hierdie vereiste sal nie op aangedring word nie. Dit word egter vereis dat hy sy eie spreekkamers en telefoonfasiliteite te Kerelaw voorsien.

Die suksesvolle applikant sal dienste aanvaar op 'n datum wat gereël sal word en sy pligte moet ooreenkomstig die regulasies van die Siekefonds uitgevoer word.

Aansoeke moet die Distriksekretaris, Distriksiekefondsraad, Charlesstraat 2, Bloemfontein, nie later as 30 Januarie 1954 bereik nie en applikante moet die volgende vermeld:

1. Volle naam.
2. Kwalifikasies (waar en wanneer verkry en opgedoen).
3. Ondervinding (waar en wanneer verkry en opgedoen).
4. Datum van geboorte.
5. Land van geboorte.
6. Getroud of ongetroud.
7. Of ten volle tweetalig.
8. Of Suid-Afrikaanse burger.
9. Watter staatsbetrekking, indien enige, beklee word.

Werwing deur en ten behoewe van enige applikant stel so 'n applikant bloot aan diskwalifikasie.

Enige verdere besonderhede wat verlang word, kan op aanvraag van die Distriksekretaris by bovermelde adres verkry word.

P. J. Klem
Hoofsekretaris

Johannesburg
9 Januarie 1954

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

VACANCY : MEDICAL STAFF

Applications are invited from registered medical practitioners for appointment for a period of 1 year to the post of Medical Practitioner, Grade A, on the staff of the Livingstone Hospital, Port Elizabeth, with salary at the rate of £500—600—660—720 per annum.

In addition to the rate of pay indicated a variable cost of living allowance at rates prescribed from time to time by the Administrator of the Province, is payable. (Current rates: Married men, £320 per annum; Others, £100 per annum.)

The privileges of free board, quarters and laundering are not attached to this post.

The conditions of service are prescribed by the Hospital Board Service Ordinance No. 19 of 1941 (Cape) and the regulations framed thereunder.

The duties of the incumbent of this post will be primarily orthopaedic.

Applications must be made on the prescribed form (Staff 23), which is obtainable from the Medical Superintendent of the Provincial Hospital, Gipson Road, Port Elizabeth, to whom applications must be addressed to reach his office not later than 16 January 1954.

J. H. McLean
Medical Superintendent

Port Elizabeth
24 December 1953 (10396)

The Divisional Council of the Cape

VACANCIES FOR JUNIOR MEDICAL OFFICERS AND HOUSE PHYSICIANS AT THE DR. A. J. STALS MEMORIAL SANATORIUM

Applications are invited from registered medical practitioners (European male or female) for the undermentioned vacancies at the Dr. A. J. Stals Memorial Sanatorium (treatment of non-European females and children Tuberculosis patients) Westlake, Retreat:

Junior Medical Officers:

Commencing notch on the salary scale £624 × 36—840 plus cost of living allowance plus an allowance of £192 per annum in lieu of board and lodging which is not available at the Sanatorium.

House Physicians:

Fixed salary at the rate of £360 per annum plus cost of living allowance plus an allowance of £126 per annum in lieu of board and lodging which is not available at the Sanatorium.

Applications must contain full details of qualifications and previous experience, marital state and whether bilingual, and should indicate the earliest date on which applicants could commence duty.

The successful applicants in the case of the Junior Medical Officers will be required to serve a probationary period of six months and on confirmation of appointment to become a member of the Council's Pension Scheme and of the South African Association of Municipal Employees. Medical fitness is therefore a condition of appointment.

The House Physicians posts are temporary ones.

Any further information required may be obtained upon enquiry direct to the Medical Officer of Health of this Council.

Applications must be addressed in writing to the undersigned to reach the Council's offices not later than Saturday, 23 January 1954.

Canvassing of Councillors or officials will prove a disqualification.

G. O. Owen
Secretary

6 Dorp Street
Cape Town
23 December 1953 (406)

City of Port Elizabeth

VACANCY

Applications are invited from registered medical practitioners for the position of Medical Officer in the City Health Department in Grade £900 × £50—£1,150 plus cost of living allowance and £151 per annum locomotion allowance.

Applications stating age, marital state, experience qualifications and present employment and whether in receipt of any form of pension and accompanied by copies of not more than three recent testimonials endorsed "Medical Officer" will be received by the undersigned up to noon on Saturday 16 January 1954.

The duties attached to this post will be mainly in the Venereal Diseases Clinics and will be laid down from time to time by the Medical Officer of Health.

The appointment will be subject to the Council's Conditions of Service and leave regulations and the successful candidate will be required to serve a probationary period and pass a medical examination by the Council's Medical Officer of Health and become a member of the Municipal Pension Fund.

Canvassing of Councillors will disqualify any candidate.

Municipal Notice No. 413, 21 December 1953.

G. H. Brewer
Town Clerk
(0401/070)

GROOTHOEK-SENDINGHOSPITAAL

Aansoeke word ingewag van geregistreerde geneeshere vir aanstelling as voltydse inwonende geneesheer. Salaris £1000 plus lewenskostetoelae. Die aanstelling is tydelik vir een jaar waarna dit permanent gemaak mag word. Verdere besonderhede kan verkry word van die Superintendent, Groothoek-Sendingoshpitaal, Zebediela, P/s Naboomspruit, Tvl.

Transvaal Provincial Administration

VACANCIES : TRANSVAAL PUBLIC HOSPITALS

Applications are invited from suitably qualified candidates for the undermentioned posts at Public Hospitals in the Transvaal.

Applications should be addressed to the Medical Superintendents of the undermentioned Hospitals concerned and should contain full particulars as to the age, professional and academic and language qualifications, experience and conjugal status of the applicant and should further indicate the earliest date upon which duties can be assumed. Copies, only, of recent testimonials to be attached.

Cost of living allowance payable at present to full-time employees:

	Cost of Living Allowance	
Salary	*Married*	*Single*
Over £350 p.a.	£320 p.a.	£100 p.a.

Full-time employees receive in addition to their salaries and cost of living allowance, the following privileges:

Leave and rail concession.

Successful candidates will be required to submit satisfactory certificates as also to submit to a medical examination at the hospital concerned.

Application forms are obtainable from any Transvaal Provincial Hospital or the Provincial Secretary, Hospital Services Branch, P.O. Box 2060, Pretoria.

The closing date of applications for undermentioned posts will be 18 January 1954.

Hospital	*Post*	*Emoluments*	*Remarks*
Johannesburg Hospital Board	Orthopaedic	£1,800	Registered medical practitioner.
The University of the Witwatersrand	Surgeon	£1,800	Higher qualification in Surgery essential.
Klerksdorp	Radiologist	£1,800	Serve at Klerksdorp, Potchefstroom and Wolmaransstad Hospitals.
Vereeniging	Part-time Neuro-Phychiatrist	£205	Duties of Neuro-Phychiatrist.

(43914)

National Hospital, Bloemfontein

PART-TIME MEDICAL, SURGICAL AND DENTAL STAFF

Applications are invited from duly qualified and registered medical practitioners and dentists for vacancies in the following departments of the National Hospital:

Surgeon	3
Obstetrician Gynaecologist	1
Assistant Obstetrician Gynaecologist	1
Obstetrician	1
Physician	3
Ear, Nose and Throat Specialist	2
Eye Specialist	2
Urogolist	1
Children Specialist	1
Skin Specialist	1
Medical Officer (out-patients)	3
Neuro Psychiatrist	1
Pathologist	1
Dental Surgeon	3

Applications on the prescribed form, obtainable from the Medical-Superintendent, must reach the Medical Superintendent not later than 20 January 1954.

(B108112)

LOCUM WANTED

From June 1954 to June 1955, resident doctor required for Mission Hospital for non-Europeans, in the Lowveld, 21 miles from Tzaneen. Hospital 100 beds. X-rays. Nurse-training centre. Surgical and obstetrical experience required. Salary £100 per month. Doctor's house. Apply: Dr. Paillard, P.O. Shiluvane, via Letaba, N. Transvaal.

Asbestos and Base Minerals Association of Southern Africa

PIETERSBURG AND DISTRICT ASBESTOS MINES

Applications are invited from registered medical practitioners for the appointment as Medical Officer (Native Section) for above Group of Mines.

The successful applicant will be required to reside on the Fields and be available at all times.

The salary scale attached to the post is £1,200 × 100—£1,500 per annum.

The successful applicant may engage in private practice among Europeans on the asbestos fields, and also on farms in close vicinity to the fields.

In addition to the above remuneration, the successful applicant will be paid the sum of 1s. per mile transport allowance and must provide his own motor transport.

Applications, stating qualifications and experience and other relevant information, must reach the undersigned not later than 30 January 1954.

P.O. Box 116 G. F. Fourie
Pietersburg *Secretary*

(This appointment has the approval of the Medical Association of South Africa—*Associate Secretary M.A.S.A.*)

Chamber of Mines (Springkell) Sanatorium

Applications are invited for the post of Junior Resident Medical Officer at a salary of £644 per annum, less £144 per annum for board and quarters, plus cost of living allowance of approximately £22 per month.

or

A Resident Intern at a salary of £26 per month, less £11 per month for board and quarters, plus cost of living allowance of approximately £22 per month.

The appointment is for a period of six months commencing 1 February 1954.

Further details from:
Medical Superintendent,
Chamber of Mines (Springkell) Sanatorium,
P.O. North Rand.
Phone 45—2244

Liesbeek Clinic

LIESBEEK ROAD, ROSEBANK, CAPE TOWN

The Cancer Clinic Association wishes to inform Medical Practitioners that the name "Cape Cancer Clinic" has been changed to "Liesbeek Clinic". The Association wishes to point out that, in accordance with its Articles of Association, not only malignant disease but also other conditions the study or treatment of which may be of value in the study of the cancer problem may be attended to at the Liesbeek Clinic. The impression among the public that only cancer patients are accepted at the Liesbeek Clinic is therefore not in accordance with the facts. For further information write to the Secretary of the Liesbeek Clinic, Liesbeek Road, Rosebank, or telephone 69—4024.

Liesbeek Kliniek

LIESBEEKWEG, ROSEBANK, KAAPSTAD

Die Kanker Kliniek Vereniging wens Mediese Praktisyne mee te deel dat die naam „Kaapse Kanker Kliniek" nou na „Liesbeek Kliniek" verander is. Die Vereniging wil onder u aandag bring dat ooreenkomstig die statute nie alleen kwaadaardige siektes maar ook ander siektes waarvan die studie of behandeling van waarde sal wees in die bestudering van die kankerprobleem, by die Kliniek behandel kan word. Die indruk dat alleenlik pasiënte wat aan kanker ly by die Liesbeek Kliniek toegelaat kan word is derhalwe onjuis. Vir verdere besonderhede skryf aan die Sekretaresse, Liesbeek Kliniek, Liesbeekweg, Rosebank, of telefoneer 69—4024.

Printed by National Commercial Printers, Elsiesriver, and Published by the Proprietors, *The Medical Association of South Africa*, Medical House, 35 Wale Street, Cape Town. P.O. Box 643. Telephone 2-6177. Telegrams: 'Medical'

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2 DICALETS t.i.d. provide:			Percent of RDA†
Vitamin A	8000	U.S.P. Units	100%
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Vitamin B_1	1.5	mg.	100%
Vitamin B_2	3	mg.	100%
Nicotinamide	15	mg.	100%
Vitamin C	150	mg.	100%
Iron	15	mg.	100%
Calcium	1500	mg.	100%*
Phosphorus	1500	mg.	100%*
Pyridoxine	1.5	mg.	**
Vitamin B_{12}	3	mcg.	**
Folic Acid	1.2	mg.	**
Cobalt	0.3	mg.	.....
Copper	3	mg.	.....
Iodine	0.45	mg.	.....
Magnesium	18	mg.	.....
Manganese	3	mg.	.....
Potassium	15	mg.	.....
Zinc	3.6	mg.	.....

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